

RITA: a look at the French mobile subscriber system

by Capt. Remi S. Johnson, MSgt. Herbert Rice, 1st Lt. Lisa M. Johnson, SFC Robert Prange, 1st Lt. Joseph Cregan, and SFC James Ralston

Logistics will be one of the challenges in supporting the MSE network and will require the closest command attention possible. Our current support plans and concepts are being modified to meet the challenge of supporting highly mobile and dispersed Signal assets.

As fielding of Mobile Subscriber Equipment (MSE) to the 1st Cavalry Division at Ft. Hood, Texas, approaches, many questions are being asked. How should we deploy this new system to best support the Airland Battle? How will this highly mobile and dispersed communications network support our organizational command structure and doctrine? What problems and solutions can we expect from the fielding of MSE? We may be able to look for some of these answers in the experiences of the French Army with the prototype system for MSE, RITA—which stands for Réseau Integre Transmissions Automatique, or Automatic Integrated Transmission Network.

RITA and MSE have several characteristics in common. Both provide the user with a switched telecommunications system extended by radiotelephone. In both, the backbone network of node centers deployed throughout the corps/division area provides connectivity to extension nodes supporting command posts (CPs), and radiotelephone access to the network for mobile subscribers. Nodes deploy throughout the battlefield, setting up a grid-like network linked by multichannel radio. And in both systems, sophisticated flood search software and automatic alternate routing provide a network that is both flexible and redundant. Destruction of any single node in the grid will not cause network failure; telephones and facsimiles are user owned and operated; and the networks are managed by a shelter mounted system control center (SCC), which allows network planners to issue orders, manage communications security (COMSEC) and frequencies, perform path profiling, monitor network status, and track a variety of personnel and equipment areas.

Judging from the French experience with RITA, we can expect that SCC fielding will concentrate control of the

MSE network in the hands of a few network managers working in the SCC. The SCC is one of the most important pieces of equipment in the MSE inventory. The direct issuing of orders to nodes and extension nodes by the SCC means that tomorrow's network will be much more centralized than today's, necessitating a change in our current organizational structure at the corps Signal battalion level.

Using pre-formatted teletype messages, information flow and reporting from the nodes/extension nodes will be almost immediate. For instance, an order issued by network planners in the SCC to establish a radio link (including frequency, azimuth, Fresnell zone calculation, and mission suspense time) takes less than 30 seconds from the first key stroke in the SCC to reception by the subordinate element. The French found that the fielding of their SCC effectively cut out the operational level of command between the node/extension node and the SCC at corps level. Increased network control works because of the automation efficiencies brought about by the SCC. What were once time consuming calculations done within different sections of the French corps Signal staff can now be done in less time by fewer people. The "unemployed" French corps Signal regimental operations and training officers (S-3s) are brought up to corps level to become part of a joint corps Signal staff during exercises. (A French corps Signal regiment is equivalent to our corps Signal battalion.) In garrison the S-3s revert back to their regiments to control day-to-day training and operations. Thus a smaller permanent corps Signal staff is necessary. Our Signal brigade and battalion staffs will be faced with the same challenge when we field MSE. The MSE network is effectively controlled by the corps Signal Brigade S-3. Separate, independent battalion

S-3 control elements will essentially monitor the operation of the network.

MSE will also cause us to rethink our concept of traditional lines of control between division and corps Signal assets. RITA was conceived of as a corps communications system extending into the division area. There are no imaginary dotted lines dividing communications support between divisions or between the corps and division area. The "one network" concept allows network planners maximum flexibility to plan communications that support the flow of the battle. A primary SCC controls the 24-node French network, with a passive alternate and reserve SCC providing jump capability and redundancy. The main advantage of such a system is that one voice controls the movement of all nodes (extension nodes tend to move with the supported subscriber), which allows rapid movement forward to support the battle without the holes in coverage that might arise if there were several SCCs controlling the network. There is no question of who will give the order to link which node across a divisional boundary or from division to corps. Frequencies and COMSEC are taken into account for the entire network, thus minimizing the chance of interference or error.

The difficulty in applying RITA's centralized concept of operations to the MSE network arises from the sheer difference in numbers and responsibility between the RITA and MSE networks. The RITA SCC manages the path profiling, frequencies, COMSEC, and movement orders for 24 RITA nodes. The MSE corps SCC will manage 42 nodes and remote radio access units (French radio access units are only located at the nodes) as well as the links to 224 small extension nodes and 9 large extension nodes. Though CECORE (the French SCC) hardware has been reconfigured and its software changed for MSE, some comparisons between the two systems are still valid. For instance, the management shelter of the MSE SCC is much smaller than



The RITA system control center (SCC) management shelter, pictured above, manages the network. One planner tracks node to node links and movements; one tracks extension nodes. Senior planners coordinate with subordinate staff elements and the corps Signal staff.

the French version, with room for only two senior NCO planners to manage the MSE network. The RITA management shelter, which contains room for the senior network manager, two officers, and two NCOs is a constant hub of activity; incoming requests for information and for planning, and coordination with subordinate elements vie for the attention of the shelter's occupants. The even greater volume of work to be done in the MSE network will necessitate either having some of the functions accomplished in the Signal battalion's operations shelters or dividing responsibilities between the corps Signal brigade and the division Signal battalions, with the corps having overall network control. The division Signal battalion would manage its own four nodes and also be responsible for path profiling/planning and order generation. The corps SCC would control system connectivity across echelons, frequency management for the entire network, and supervision of all corps nodes. An automatic inter-SCC data-base update would ensure that corps was completely current on

divisional movements and orders. If we decide to use our current philosophy of separate division and corps networks, we risk defeating one of the principle advantages of MSE—unity of command.

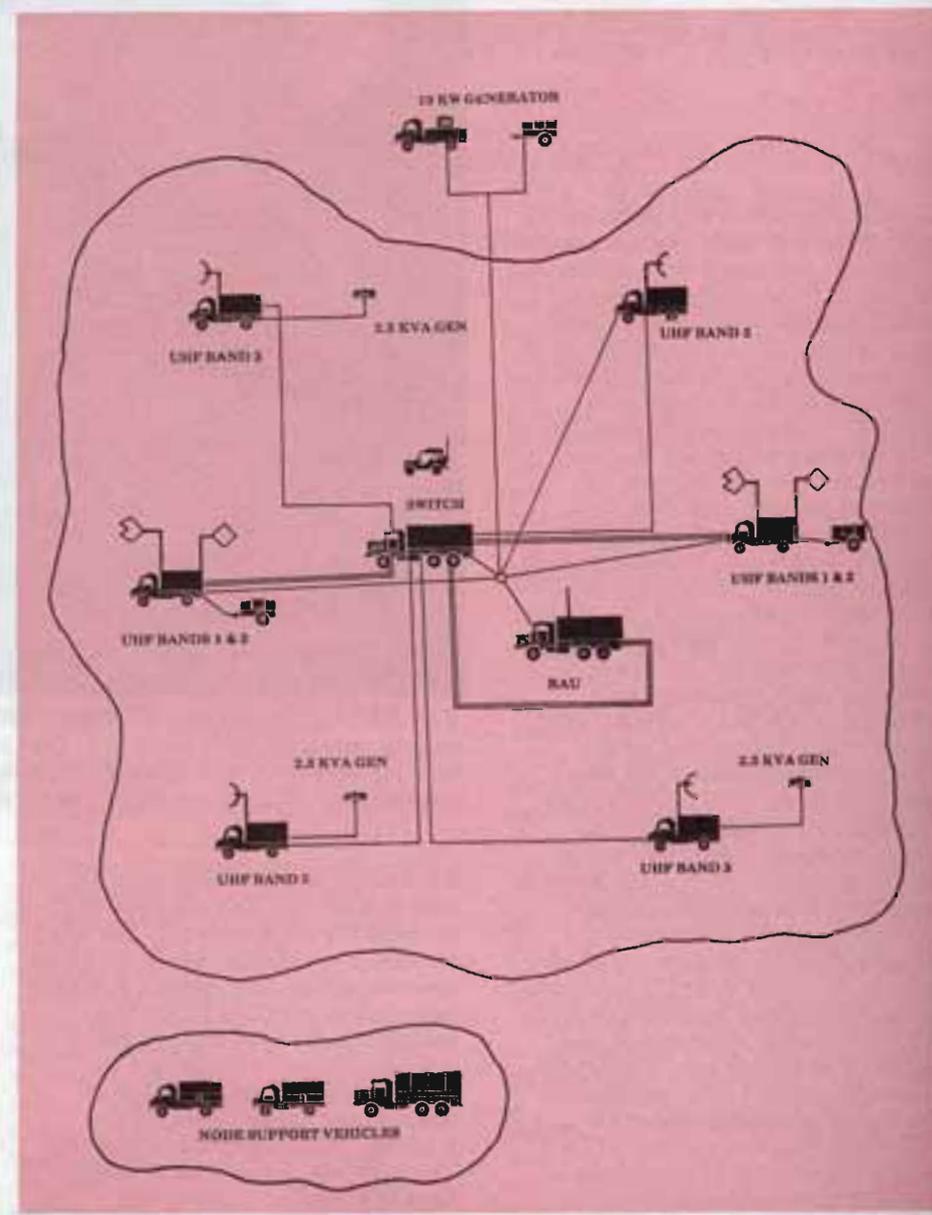
Logistics will be one of the challenges in supporting the MSE network and will require the closest command attention possible. Our current support plans and concepts are being modified to meet the challenge of supporting highly mobile and dispersed Signal assets. MSE nodes and extension nodes will be spread all over the division/corps area, making the job of feeding and taking care of soldiers and refueling and maintaining equipment much more difficult. The solution for supporting extension nodes is simple: they must be taken care of by the supported unit. The problem for nodes is a bit more vexing. Nodes have to be independent and highly mobile in order to move forward to support the subscriber. Their necessary dispersion and the fact that they may have to move at any time make support from higher headquarters extremely

difficult unless accomplished on an area support basis.

The French have worked out a practical solution to this support problem using their existing assets. The two corps French Signal regiments divide their area of operations roughly in half. Each regiment installs one central regimental resupply/refueling point with ration storage and tanker and wrecker support under the supervision of the supply officer (S-4) and the battalion maintenance officer. This support is too distant for most nodes to access, so two additional, smaller refuel and resupply points are set up to support nodes on an area basis. Since the French believe that node company commanders are more effectively used in a support rather than command role, the node commanders and their headquarters platoons are in charge of these points. The area refuel and resupply points service any node within their area of responsibility.

Each RITA node is designed to be self-supporting and comes equipped with three support vehicles and a jeep. These vehicles are used to pick up generator fuel and rations from the area refuel/resupply point. Signal soldiers at the node prepare their own food, eliminating the need for cooks. (True to French standards of cuisine, food is fresh and usually quite good.) The support vehicles are also used to transport soldiers and equipment, and for miscellaneous missions like shower runs. Since RITA nodes jump on the average of every 72 hours, soldiers refuel vehicles on the way to the new location at the area refuel and resupply point. Each area refuel/resupply point has several vehicles and a tanker that are continually supported from the regimental refuel/resupply point. The current plan for MSE node resupply is quite different and should be re-evaluated as we field the system.

The RITA nodes use central-site power with primary and backup generators, whereas the MSE nodes use generators with backup power provided by vehicle alternators. This gives MSE personnel more flexibility in positioning individual assemblages

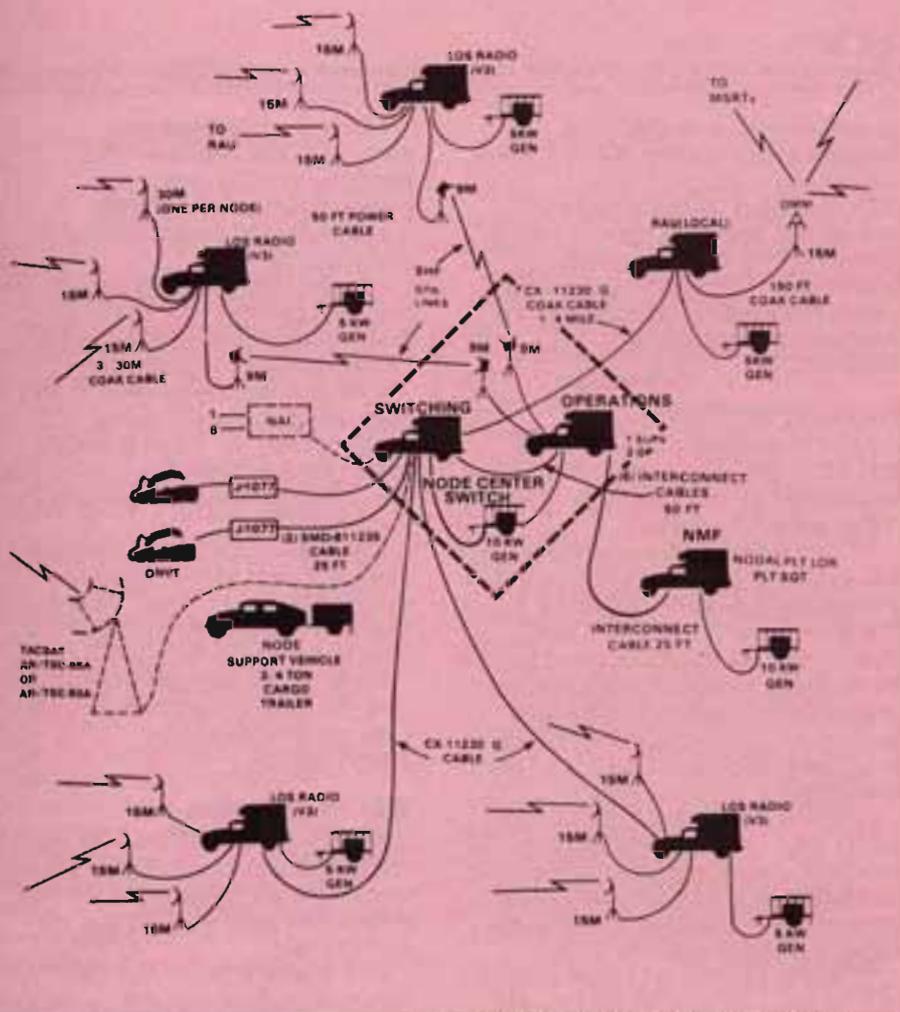


Typical deployment of the RITA node center

of the nodes; however, individual generators use more fuel and are more cumbersome. Maintenance at the RITA node is performed by the operators, two vehicle mechanics, and one generator mechanic organic to the node platoon. MSE nodes will have similar capability.

MSE will probably have a greater need for leadership than for strict technical expertise, especially at the small unit level. If RITA equipment is any indicator for MSE, installation, operation, and maintenance of Signal equipment will be easier than ever

before. Under RITA, Operational Readiness Float items are forward positioned with the Signal regiment. Very little electronic operator maintenance is required, and key pieces of Signal equipment are switched out one for one when failure does occur. Redundancy in the network means that the subscriber rarely knows there is an outage. Training soldiers to do relatively simple tasks day or night, keeping pace with the combat arms, and taking care of soldiers and equipment in such an environment will be the



(illustration by Larry Komp)(from FM 11-999F)

and faster, more reliable service.

Senior French officers we spoke with, including several general officers, all agreed that the most difficult part of fielding RITA was changing the mindset of certain officers resistant to change. The French had to modify the organizational structure of the Signal Corps and automate and centralize command and control at higher levels than before. Today no one questions that these changes resulted in greatly increased operational capability, but at the time some of the changes were not popular with those more comfortable with the old ways of doing business. The senior French leadership had the vision to realize what they wanted RITA to do and made the sometimes painful changes necessary. Likewise, we in the U.S. Army have to accept the change to our doctrine, organizational structure, and mindset if MSE is to do what we want it to: support the corps in the Airland Battle through the 1990s.

(For a more detailed review of MSE, see the Summer 1986 issue of ARMY COMMUNICATOR.)

This article is the combined effort of a team of six people who spent six months training at the French Signal School and in a French regiment stationed in Germany:

Capt. Remi S. Johnson, formerly from the 93rd Signal Brigade, Germany

1st Lt. Lisa M. Johnson, formerly from the 93rd Signal Brigade, Germany

1st Lt. Joseph Cragun, MSE Project Manager's Office, Fort Monmouth, New Jersey

MSGT. Herbert Rice, 13th Signal Battalion, Fort Hood, Texas

SFC Robert Prange, TSM, MSE, Fort Gordon, Georgia

SFC James Balston, STD, SLD, Fort Gordon, Georgia

Updated MSE node center switch (NCS) configuration

challenge of MSE. The fundamentals of map reading, careful site selection and camouflage, and equipment crew drills will be subjects that junior leaders must know backwards and forwards.

The original RITA planners hoped that large numbers of personnel could be cut by eliminating older generation equipment. As it turned out, however, only minimal savings were made in personnel strength. Though many soldiers changed MOSs as older equipment was scrapped, the new equipment required new skills and the people trained to use them, so the actual personnel savings were small. However, no soldiers were cut from units before or during the fielding of RITA, and some older equipment was

kept on hand to ease interfacing with non-RITA units.

MSE will result in vastly improved service to the subscriber. In our conversations with French officers at all levels—both Signal and non-Signal—the recurring theme we heard was that communications were no longer a limiting factor for the combat arms. The Signal officer, whether justifiably or not, benefited from a change of attitude toward communications by the subscriber. A major impact of this increased ability to support the user was that units that were previously not getting communications support could be supported, and units that did get communications support got better support in the form of "hot" jumps