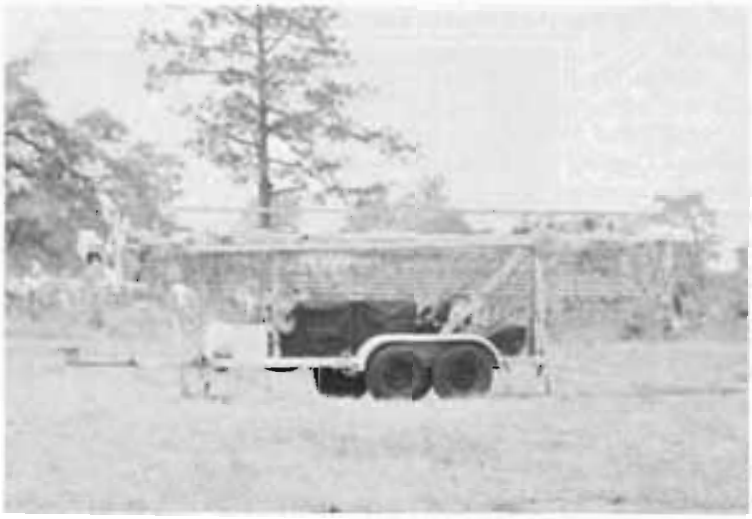
Fast mast

Will it be the cure-all for our tactical antenna's height, mobility and erection time problems?



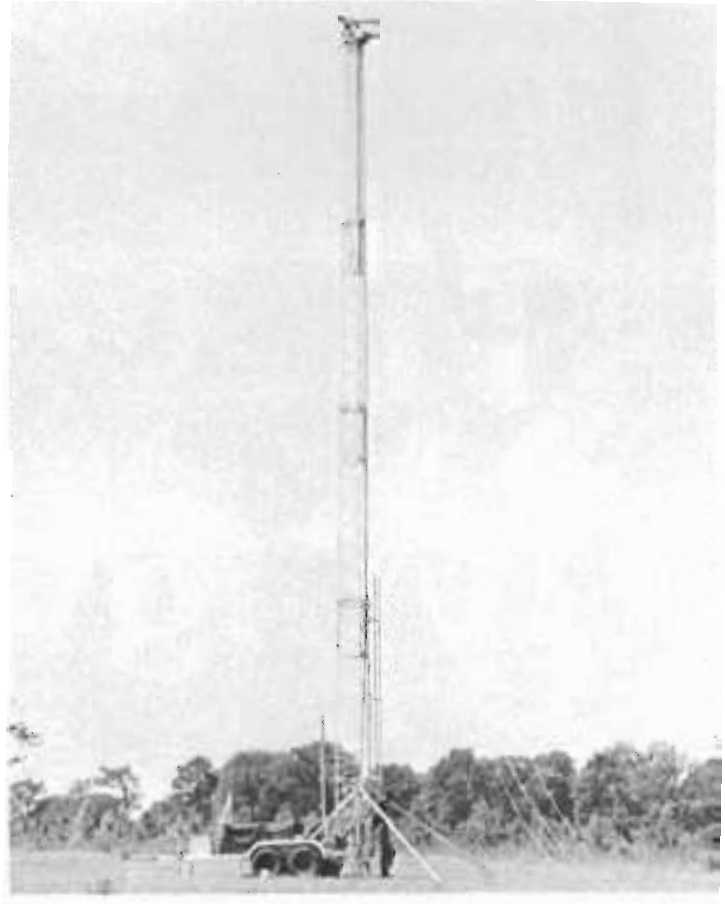
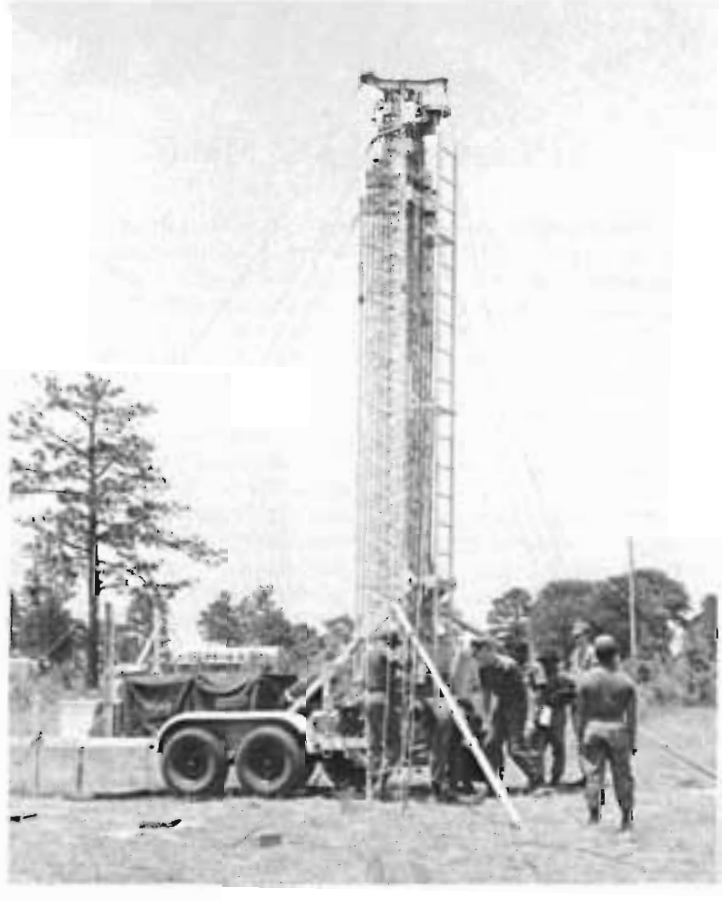
by Capt. Richard McGinty
Photos by Spec. 4 Edward Madison

Supporting the Combat Arms units in Europe with multichannel radio communications always poses a challenge to the tactical signal unit. One challenge deals with the ability to establish line-of-sight in the presence of trees — tall trees. The US Army Signal Center has long searched for antenna masts that could be erected higher than the European vegetation which often times exceeds 90 feet. Although there are antenna towers currently in the US Army inventory that go well beyond the height of the surrounding trees, these towers are time consuming to employ. If an antenna mast could be found that will exceed the height of the surrounding trees and still be erected and restored more expeditiously, the performance of the multichannel radio systems and consequently the ability of the Signal Corps to support the combat units would be greatly enhanced.

One possible candidate which has been developed by industry and which may alleviate some of the communications problems currently being experienced in Europe is being evaluated on Fort Gordon by the Communications-Electronics Board. This mast has been provided for evaluation by a civilian contractor, at no cost to the government, in an effort to determine its military suitability and adaptability. Since the mast is a non-militarized item, many areas that require remedy before any attempts to bring the mast into the Army inventory have already been identified. The mission of the C-E Board is to identify as many other areas as possible during the limited time in which the evaluation is conducted.

The mast being tested by the C-E Board is quite different from the masts currently utilized by tactical signal units. It can support a weight load up to 1500 pounds, it has a telescoping configuration in which sections are nested and extended in unison, it is raised and lowered by a cable and pulley system that is electrically operated and it provides for a remote electrical control.

Additionally, the mast is transported on its own trailer. This aspect could pose a problem to tactical signal units in that current radio assemblages are required to tow their own generator sets. The military generators would also be used to operate the electrical motors which raise and lower the masts. An approach under investigation to remedy this apparent incompatibility is to mount the military generators required by the radio assemblage onto the mast trailer. Another area of this investigation is to verify that the generators do not cause signal interference when mounted directly below the antenna element and in such close proximity to the waveguide or coaxial cable.

Several other areas of consideration are being evaluated during the test period. These include defining the actual amount of time required for a three-person team to erect and restore the mast as well as an assessment of the mobility characteristics of the mast in a field environment (including tactical operations at night). Training of soldiers and human factor considerations impacting on the item's suitability and adaptability are also of critical importance.

The antenna mast the C-E Board is evaluating may or may not help solve the communications problems of our European combat units. The information gained from this evaluation may, however, provide the impetus to adapt this mast to meet military requirements or lead to the development of an antenna mast that does. In this sense, regardless of the results of this test, the C-E Board is helping to solve the problems of the US Army Signal Corps.