TWO-WAY RADIO AIDS MOSQUITO ABATEMENT DISTRICT

ARTHUR F. GEIB
Manager, Kern Mosquito Abatement District, Bakersfield, California

In California's agricultural empire, "The Great Central Valley," mosquito control, for various reasons, is, and has been for years, basically a larviciding operation. With this approach to mosquito control, it is most essential that large regions be under constant surveillance.

Where timing and speed of insecticide applications are most important in attaining desired results, two-way radio communication has proved exceptionally valuable. A Motorola two-way system, with eight mobile units, was placed in operation by the Kern District in July of 1957, and has since been used in all facets of our operation. We found the original eight units so helpful and valuable that four additional units have been added since 1957.

Two-way radio is used at Headquarters' office and in the following equipment:

Pick-up trucks of five division foremen (Fig. 1).

Two pick-up trucks and a truck in the Source Reduction unit.

Mechanic's pick-up truck.

District Airplane (Fig. 1, *insert.*)

Manager's and Entomologist's cars.

The District operations cover in excess of 1300 square miles, ranging a distance approximately 100 miles from one end to the other. Most of this area requires constant surveillance and inspection every few days. To provide repetitive inspections

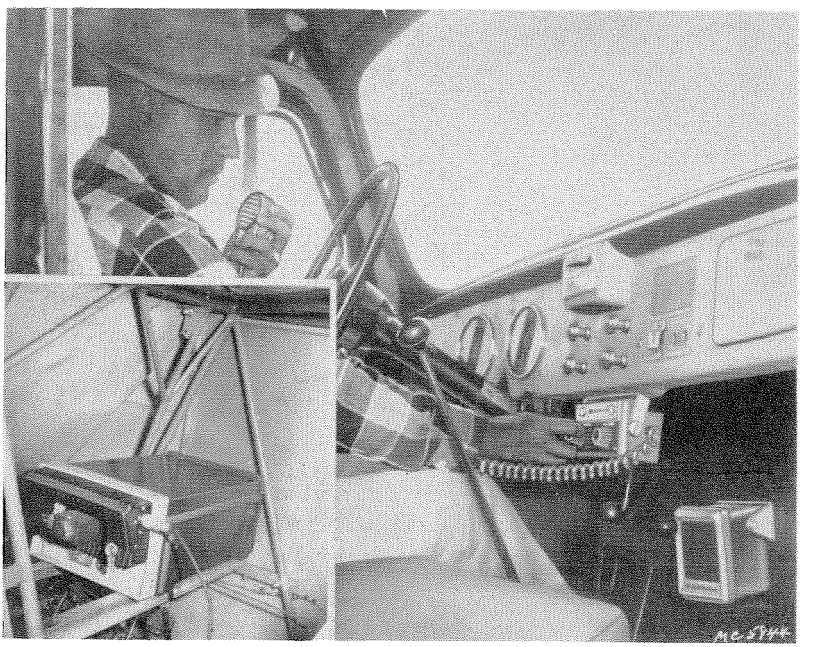

FIG. 1.—Foreman adjusts squelch on mobile two-way radio while receiving message from headquarters. *Insert:* The compactness of the transmitter-receiver makes it simple to mount in plane.

and insecticide treatments over such a large area, the District is divided into five divisions, four rural and one urban, which includes Bakersfield and other principal cities in Kern County. A foreman provided with a radio-equipped pick-up is in charge of each division. He directs the operations of five to six patrolling inspector-operators in jeeps which contain necessary spraying equipment. The two-way radio system has been especially helpful to management in integrating the widespread operations and keeping all key personnel in constant touch with current problems.

Our Motorola system offers many advantages. In addition to keeping us in touch with current problems so that we can keep ahead of developing mosquitoes, two-way radio aids us to:

1. Cut mileage and the expenses of travelling.
2. Cut the number of man hours required to do our work.
3. Secure fast aid in breakdowns.
4. Reduce the number of vehicles needed.
5. Keep tabs on locations of all men and equipment, as well as shift men and material immediately when needed.
6. Improve public relations

Radio's first benefit listed—mileage reduction—is illustrated in several ways. For one example, when an operator's jeep becomes embedded, he can usually reach a telephone within a reasonable distance and call headquarters. Headquarters will contact the division foreman by radio. Quite frequently the foreman is only a few miles away and can quickly come to the aid of the immobilized jeep. Without radio, all too often, we would be forced to send aid from our headquarters, which may be 50 miles or so away. In such cases, it was heretofore not uncommon for two men to lose one-half day each to get the equipment out and running.

Radios help us reduce travel, save time, and increase efficiency in the operation of our plane. When a foreman discovers a critical situation where emergency treatment is required, he radios the pilot. The pilot sprays the area as he comes to it during the course of the day. Radio has saved the pilot from landing his craft, getting the additional assignment and going back to the critical area. The foreman is saved time and miles which would be required in locating and contacting the plane on the ground.

In general, we reduce mileage in every instance where we can contact key people by radio rather than being forced to locate them by travel or wait until they have checked in, then sending them back to do a particular job.

A reduction in man hours is another benefit of radio. With the Motorola system, we attain maximum utilization of our men because we are able to dispatch them to areas requiring immediate attention.

Because of radio, we do not have to put another man in the shop. Our mechanic can handle all repairs by himself through close coordination with the various foremen. Many times a foreman in the field "gets on the radio" and describes vehicle trouble to the mechanic in the shop. The mechanic can frequently diagnose the problem and radio back instructions, enabling the foreman to make necessary repairs without coming in to the shop.

While out on a service assignment, the mechanic monitors his radio for additional repair calls. As they come in he makes the added stops along his route before returning to the shop. Radio has prevented a second trip to and from the original area of servicing. Here another benefit of radio is realized—fast aid in breakdowns.

The effective use of our plane, coordinated with radio, is a major aid in minimizing the number of men required to carry out our activities.

Our two-way radio system makes possible the performance of our assignments with a lesser number of vehicles. If we could not coordinate spraying as closely as we do with radio, we would probably have to add three zones to our present set-up. This would mean the addition of three men and three jeeps, which would increase costs.

We are able to keep close control over our equipment and men with radio—the fifth benefit listed. Heavy equipment, such as dozers, are expensive to operate, so maximum utilization must be achieved. Through our equipment operator, who has a radio in his vehicle, we can make up a tight schedule so that all equipment is used to the fullest.

Also, many times a foreman needs a certain piece of equipment in a hurry, so he simply radios for it. If he did not have radio, he would be forced to leave the job in order to go to a telephone to make his request. Headquarters would then hunt down the equipment and send it out. Much valuable time and many man hours would be lost.

Public relations are improved through radio. Service to a home owner is possible minutes after a call for aid is received. The dispatcher simply takes the call, radios the foreman, who may be only a few blocks away. Frequently he will answer service requests within minutes of their being received in the office.

Besides the benefits mentioned here, radio is a big boost to the source reduction men who are frequently in their vehicles, contacting persons in seeking to eliminate mosquito producing sources. When service requests come in while the men are on the road, the dispatcher simply relays the request and the source reduction men make the additional stops as they come along their routes. The two source reduction men also use radio to keep in touch with the foremen in the event a troublesome problem is encountered.

Our radio system has four control points at headquarters, any one of which may be used to contact the men in their vehicles. Each control point consists of a handset and loudspeaker. Phones are located at the office secretary's desk, the manager's desk, in the office of the Entomologist and in the mechanic's shop. The Motorola base station is located at headquarters, and the repeater station on nearby Mt. Breckenridge, at an elevation of 7600 feet. The system is part of the countywide radio system of Kern County, and all maintenance is handled by the county. The system is licensed on the UHF band.

The two-way radio system has proved so valuable as an aid to us in our mosquito control operations that its increased use will be included in any plans to expand our abatement activities.