Aerial Photographs

SERGEANT FIRST CLASS JOHN E. FOLEY

Aerial photographs can be valuable to an infantryman. They can update and supplement the maps of the area in which he is operating, and they can help him interpret his maps and get a real-life picture of the ground.

For example, on one map of a training area on the island of Molokai in Hawaii, a large area appeared to be clear ground with many trails. When an aerial photo was obtained, though, it showed that the bare area was covered with pineapple plants. This meant a seasonal agricultural change to the map. (Before the plants matured or after the fields were harvested, movement in the area would be unrestricted. In between those times, though, the mature plants would be too high to step over, would be very tough, and would have razor-sharp edges.) In addition, the aerial photo showed some buildings that were not on the map.

But if you're a battalion S-2 NCO, where do you get such pictures? If you're lucky, you can request photos from your battalion S-2, who can obtain them from your brigade or higher, which in turn can get them from Army or Air Force professionals. You can even request a specific mission and get photos of the exact areas you want. (See "Aerial Photography," by Captain Eugene J. Palka, INFANTRY, May-June 1987, pp. 12-13.)

If the S-2 is unsuccessful, though, you're on your own, and this was my problem when I was asked for photos of the training area on Molokai for a battalion FTX. The S-2 section didn't have any such photos and, much to my surprise, didn't have any conventional means of obtaining them. Then Field Manual 21-26, Map Reading, came to our rescue. Chapter 8 of the manual deals with aerial photography.

After studying that chapter, we borrowed a 35mm camera with a 150mm telephoto lens from my wife, trained a scout team, and hitched a ride on a helicopter going over the area. We could have obtained a camera from the Training Support Center (TSC) photo section, but I preferred to use my own. (With the growing popularity of photography, you may be able to find an enthusiastic amateur photographer or two in your battalion.)

VARIETY

In studying the field manual, I was amazed at the wide variety of photographs. For "do-it-yourselfers," though, the basic ones are the following:

Vertical. This type will most closely duplicate a map, since you take the shot looking straight down. (If you do this yourself, be careful and strap yourself down so you won't fall out of the helicopter in flight.)

Horizontal. This type is not covered in the manual, but it gives a better appreciation for the terrain in certain instances, such as looking straight ahead at the side of a cliff.

Low Oblique. A low oblique photograph does not show the horizon, and the view is similar to what you would see looking down from the top of a hill or a tall building. No scale is applicable to the entire photo, and distance cannot be measured, but it can be used as either a supplement to or a substitute for a map. A low oblique shot of a town, for example, is useful in planning a raid or an encirclement—with a recent aerial photograph you get the latest update as to what is on the ground.

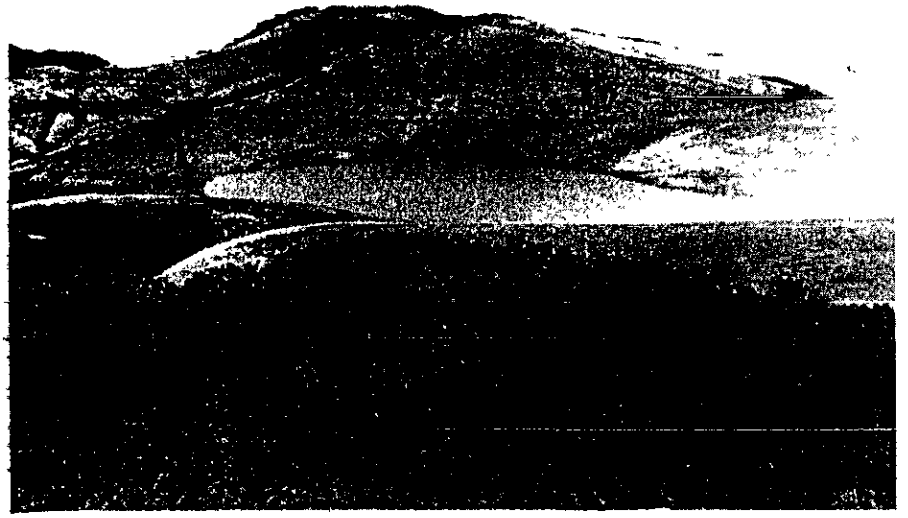
High Oblique. The horizon is always visible in this type of photo, and the photos we have taken are mostly in this category. Scale and distance cannot be measured for the same reason they can't in a low oblique photo. But we have obtained excellent results with this technique.

Experimenting with various types of film, we found that ASA 200 color film was good. We found ASA 100 black and white film disappointing, but ASA 400 black and white probably would have been better. The color photos really show up the terrain features and the differences in the terrain. Post TSCs can develop color, but it may take a while; since I was in a hurry, I took the film to a commercial developer and had the pictures the next day.

Specialized film is available if you have access to normal aerial photo supplies. With infrared film, for example, you can take photos at night if a source of infrared radiation is available. This film can detect artificial camouflage materials, although a special camouflage detection film is also in the inventory.

An aerial photo is just a nice picture, though, if you don't also collect certain information about it—place, time, direction, altitude, and the like. With Army or Air Force photography, this information is included on the photos, but if you're going to do it yourself, you will need a two-man team—a photographer and a recorder.

We covered a map with acetate and



The size of the central feature in a high oblique photograph such as this one can be compared with its size on the map to obtain an estimated scale.

mounted it on quarter-inch plywood. This ensured that the map wouldn't blow around during flight and gave the recorder a surface to write on. To simplify things further, we wrote in an alcohol marker directly on the acetate. In planning, we circled the general areas we wanted to photograph, and tried to include landmarks such as a lake or a cut in a road.

For accuracy, we recorded the following information:

- Film roll number.
- Frame number.
- General grid location of the area (simplified by circling the area on the map and marking it with the roll and frame numbers).
- Time and direction of the shot.
- Type—high or low oblique, vertical, or horizontal.
- The altitude of the aircraft.

A typical shorthand note would look like this: Roll #2, FR 1, Area #25, 1100 hrs., N, LO, 2,000 ft. This translates as Roll #2, Frame #1, Target area #25 (a village or hilltop), 1100 (the time the photo was taken), the photo is looking North, and it is a low oblique shot taken at 2,000 feet. While we had to work together at a high rate of speed, we tried to be as accurate as possible.

With a good plan and good teamwork, you can make a strip of pictures to show a large area, or you can get the shots you need of objectives for raids. Needless to say, the person handling the camera must be competent enough to take good pictures, because blurred photos are of little use.

You also need to give the pilots of the helicopter a map with your flight route and targets marked just as they are on the map you are using. This makes it much easier for both you and the pilots to go where you need to go without wasting time. When requesting helicopters, also ask for extra headsets and microphones to enable the photographer, recorder, and pilots to communicate effectively during the flight.

On the subject of scale, it is only the vertical photo that can provide an accurate scale, and Chapter 8, FM 21-26, page 8-8, explains the math more clearly than I can. It also explains the comparison method. With a low or high oblique photo you can get an estimate of the size of the central feature of a photo by comparing it to the map. In the photo shown here, for example, the lake is approximately 280 meters wide on the map; on the photo it is about 3.5 inches wide. This works out to a scale of one inch to 80 meters, and this ratio worked out on the ground as well. Again, this works only for the central feature of the photo; we did not try to apply the scale to the entire photo.

When you conduct your own photo reconnaissance missions, you will have a great deal of flexibility in getting exactly what you want, and you can do custom work such as getting shots of the same location from different directions. This would be especially advantageous in a low-intensity conflict, or when planning a raid or an encirclement. In one instance, for example, we took a low oblique photo of an area looking northwest and down an extremely steep slope and a high oblique photo of the same area looking west, which showed the vegetation and the low ground leading to a town.

With photos, you can give your soldiers a better appreciation of the terrain and help them orient themselves on the ground faster, especially when they're going into an area for the first time. Aerial photos from different directions and angles will also help you make accurate terrain models to use in briefing them.

Try it the next time you take your camera to the field. Take some photos as you come back in on a helicopter. Use color film for clarity and contrast, and record what you're shooting. Then compare the photos to your maps and prepare terrain models. In short, practice using aerial photos now, so that you will be prepared to use them in combat.

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