

## Chapter 5 – PLAN FOR COLLECTION OF IMAGERY

The following methods for collecting imagery of targets have proven to be successful in past experiments. The test designer should use the method that makes the most sense for the particular target and location that is being evaluated.

Spacing of the images should be such that the target cannot be detected at the longest range but can be detected/recognized/identified at the closest range, depending on the purpose of the experiment. The spacing between the images does not need to be constant but should result in a reasonable number of images for the observer test. There should be a larger number of images collected around the anticipated detection range. For vehicle-sized targets, good results in detection experiments have been obtained with 16 to 20 images in the data set and with typical spacing of 200 – 250 meters at the longer ranges and 100 meters at the closer ranges. Depending on the intent of the experiment, imagery may be taken from the ground or from an aerial platform.

In each sub trial photographs are taken of the targets and their backgrounds. There should be sufficient atmospheric visibility and cloud cover height during the photographing to allow for good quality images. It is important to remember that the field of regard should be centered in the image, however, the target should not be consistently centered in the full image. Also, care should be taken to limit the amount of sky in the image because of the sky's effect on exposure. The photographing typically takes approximately 30 minutes and should be done during the corresponding sub trial period utilizing the best-suited weather. For example, during a Coyote practice trial [3], images were collected at the ranges shown in Table 1 below.

**Table 1: Example of Imagery Collection Ranges (m) from the Coyote Trial**

Image #	Range
1	2500
2	2250
3	2000
4	1800
5	1600
6	1400
7	1200
8	1100
9	1000
10	900
11	800
12	700
13	600
14	500
15	400
16	300

### 5.1 PHOTOGRAPHIC SLIDES

Traditional 35 mm slides should be obtained using a good quality camera (e.g. Minolta Dynax 600 SI) and high quality, ISO 400, 35 mm color slide exposure film (e.g. Kodak ISO 400 Elite Chrome Select, Daylight, 35 mm) and processed using standard commercial slide processing.

### 5.2 DIGITAL IMAGES

At the time these guidelines were written, successful results were obtained using a Sony TVR-950 digital camera using the automatic exposure setting on the camera. Images were 1156 x 840 pixels and were saved as JPG files. In addition, 35 mm slides can be scanned to provide digital imagery. Good results have been obtained by scanning with a flatbed, Nikon Coolscan, Model 4EED scanner using Photoshop 7. They were saved as TIFF images, 24 bit true color, no compression, 2900 x 2900 pixels, with a file size of approximately 28.7 MB. Scanning, however, is not recommended, and if digital images are to be used, they should be taken directly with a good quality digital camera.

In one instance photographs and images were gathered at the same time from a helicopter using two cameras to photograph targets deployed along the edge of a wood line. One was a high quality commercial digital camera equipped with a normal 50 mm lens. The second was an equally high quality commercial 35 mm auto focus film camera equipped with an identical 50 mm lens. It was determined prior to the trial that an equivalent of ISO 400 setting would be used. A high ISO would allow the photographer to select a high shutter speed to counteract the effects of vibration encountered during flight and to maintain the lens' aperture in the range of f4 – f8, best for a fast normal lens. A highly experienced and professional armed forces combat photographer performed the task.