

Color Infrared Film for Mapping and Multispectral Photointerpretation

The processing of color IR positive film in order to utilize it as negative film is described, and examples of color prints so produced are shown.

COLOR INFRARED (CIR) film and multispectral systems are valuable techniques in remote sensing. However, conventional multispectral cameras have multiple narrow-angle lenses or several narrow-angle, small-format cameras combined into a system and therefore usually are not suitable for both multipurpose spectral photointerpretation and precision mapping such as cadastral surveys.

Multilayer, tri-pack color infrared film used in a wide-angle photogrammetric camera would seem to offer the possibilities of both multispectral photointerpretation and photogrammetric operations. However, because CIR film is available only as a positive film, the cost and laboratory difficulties of using it as a multispectral system is somewhat impractical.

In an attempt to substitute for the lack of a negative color infrared film, we modified the exposure, filtering, and processing of regular positive infrared film and after several tests we achieved the striking color enhancements shown in the accompanying photos (Plates 1 and 2).

In order to create negative CIR film from positive film we either had to increase exposure by 20 percent or developer time by 20 to 30 percent depending on terrain brightness characteristics. The photos shown are

from Kodak Aerochrome infrared film, EK-2443, using Kodak filters and were manually processed with C-22 negative chemicals in a Morse tank. Motor-driven processing was avoided because it created color irregularities at the beginning and end of the film. The paper prints were processed in trays to determine color balance and then the two-step process in the Kodak Rapid Processor Model 30 was used.

The multispectral effect in the urban scene (Plate 1) is illustrated by the appearance of new and old buildings varying in hue relative to construction age. The agricultural scene (Plate 2) show the effects of fertilizers, salt, water, and chemical pollution, fertilizer decays, irrigation efficiency, and culture. Our conclusion is that the results are superior to those obtained when using the CIR film as a positive both for cadastral purposes and for multispectral enhancement.

The author acknowledges the support and encouragement of the late Brig. Gen. Lawrence Jacobs USA Ret of ASP, and from the people of Kodak International.

(Received May 18, 1977; Accepted January 31, 1978)

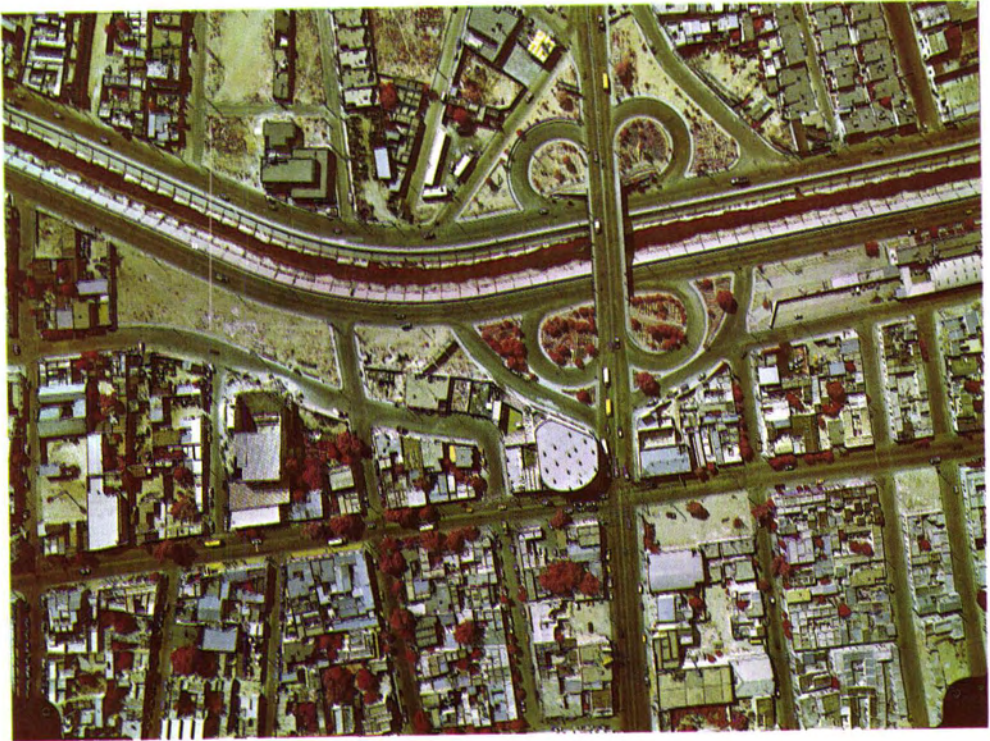


PLATE 1. Urban scene, Kodak Aerochrome infrared color film, EK-2443.



PLATE 2. Agricultural scene, Kodak Aerochrome infrared color film, EK-2443.