

## Airborne Optical Sensors

Normal daytime aerial photography using films or electro-optical sensors must be considered as a prime method of reconnaissance information for incorporation into the United Nations peacekeeping operations. Photographic systems including aerial photography and especially today's sophisticated electro-optical systems have extremely high resolution capabilities. Black and white photographic negatives can provide useful images of high resolution. Electro-optical images are digitally produced and can be enhanced and processed on specialized computer equipment.

Traditional photography using a standard aerial camera is a relatively economical and reliable aerial reconnaissance method. Film is inexpensive and has the advantage of being capable of enlargements for interpretation purposes. A darkroom capability is required, however, which could prove to be a difficult provision in remote or isolated areas. Aerial photography is restricted to fairly high light levels and must be acquired during daylight hours, usually between 10:00 a.m. and 2:00 p.m. Cloud cover can also pose a serious problem for aerial photography.

Recently, a relatively new concept in solid state signal processing and imaging has given rise to electro-optical systems known as charged-coupled devices or CCDs. Unlike aerial photography, CCD systems record imagery onto a magnetic tape and is viewed on a television monitor. CCD imaging systems are available as small, light weight portable units which can be readily installed for aircraft operations. Compared to aerial camera systems, CCDs are relatively expensive, but very effective and reliable sensors.

The acquired imagery from CCD systems is normally in the visible portions of the spectrum, but can be filtered for specific applications. The imagery produced is recorded onto videotape for immediate use as a very high resolution source of surveillance