Table 5

Criteria for Selection of Infrared Sensors for Reconnaissance Missions*

IRLS Selection Criteria	FLIR Selection Criteria
• hard copy imagery required	• real-time imagery required
• image mensuration and analysis required	• image mensuration and analysis not required
• wide field of view across track, continuously-mapped imagery desired	• narrow field of view providing details of selected areas desired
• operator has little or no control over pointing of sensor	• operator has full control over pointing of sensor
• sensor operation may impose velocity/height restrictions on aircraft	• sensor operation will not impose velocity/height restrictions on aircraft

* William T. Noel, "Utilization of IR Imagery in Tactical Reconnaissance," in ***Aerial Reconnaissance Systems — Pods/Aircraft.*** Vol. 79. Edited by Ed Shea. (Reston, Virginia: The Society of Photo-optical Instrumentation Engineers: 24-25 March, 1976), pp. 99-100.

However, the data will likely be recorded on magnetic tape, or a similar storage medium, and processed after the aircraft has returned to base to provide the final interpretable product.

None of the sensors described previously is able to penetrate cloud cover. In contrast, airborne radar systems can collect imagery regardless of cloud cover. They can also be used day or night because they provide their own illumination.

Radar, an acronym for *ra*dio *d*etection *a*nd *r*anging, is an active sensor that transmits short pulses of microwave energy and then records the echoes received back in their order of arrival. Airborne radars are called side-looking airborne radars (SLAR). SLARs produce continuous strips of imagery of the terrain adjacent to the flight path of the aircraft.

There are two main types of SLAR. Real aperture, or brute force, radars (RAR) require a physically large antenna to achieve any reasonable amount of spatial detail in the resulting images. Synthetic aperture radar (SAR) achieves more spatial detail without having to use a large antenna. It uses the forward motion of the aircraft to create synthetically the effect of an antenna hundreds of metres long (Figure 5).