

temperatures between minus fifty degrees Celsius and plus fifty degrees Celsius, an 8.5-13.5 micrometer infrared detector is used. The swath coverage of infrared linescanners is directly proportional to the flying height of the aircraft and is usually 1.5 to 2.5 times greater than the aircraft altitude.

The resolution of infrared remote sensing systems is categorized into two types: spatial resolution and thermal resolution. The spatial resolution of infrared linescanning systems is dependent on the size of the infrared detector utilized within the linescanner. Optimum size infrared detectors for reconnaissance purposes would be 1.0 milliradians. Using a 1.0 milliradian detector from an operating altitude of 300 metres above the ground, a spatial resolution of approximately 0.3 metres could be expected. The thermal resolution of infrared is relatively standard for most available systems, that is, they are capable of detecting thermal differences of 0.2 degrees Celsius. The Open Skies Treaty allows for infrared linescanners with 30 centimetre spatial resolution and 0.2 degree Celsius thermal resolution. Figure 2 is a thermal infrared linescanner image of an airbase. Note the indirect evidence of human activity by the presence of underground heating distribution lines, heated buildings. Also evident is vehicular activity such as the aircraft parked on the apron, and the cars in the parking lot.

Airborne thermal infrared linescanning systems have the advantage of operating at night at low levels (300-1000 metres above the ground) to provide high resolution images of the infrared emissions of objects from the terrain below. Real-time imagery can be produced on-board an aircraft and can be down-linked immediately to a ground station if timely information is required.

Forward looking infrared systems (FLIRs) are imaging infrared video systems closely related to the infrared linescanner. Typically, they are mounted in a low level reconnaissance aircraft or helicopter and used to monitor movement of personnel or vehicle activity on the ground. FLIRs have the advantage of being able to look obliquely at an object on the ground, and the capability of being "steered" by the