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AIRBORNE IR LINE SCANNER DATA SYSTEM AT THE CANADA CENTRE FOR REMOTE SENSING

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The Canada Centre for Remote Sensing (CCRS) has two DAEDALUS analog line scanners in the CCRS aircraft. The spacial resolution is 2.5 milliradians for the 8 to 14 u meter sensor and 1.7 milliradians for the 3 to 5 u meter sensor. Each has black body references for quantitative data processing.

The scanner analog video and sync data are recorded on wide band FM Group II amplifiers on a MINCOM tape. The record speed is 30 IPS for 2.5 milliradian resolution and 60 IPS for 1.7 milliradian resolution due to upper cut off frequency of the FM Group II amplifiers.

The hardware data recovery system developed by CCRS provides either Universal Imagery Format digital computer compatible tape or continuous strip colour film with quantitative temperature colour assignments. The scanner analog video data is digitized on an 8 bit analog to digital converter. The digitization of black bodies and video are controlled by the scanner sync track. The film is produced on a CCRS built film recorder.

The video data can be digitized in three modes. First in a constant A/D mode where the sampling frequency is selectable. To remove panoramic distortion two fixed modes of non-linear A/D are provided using a Binary Rate Multiplier control. The 2.5 milliradian resolution data is digitized to 1024 pixels per scan line with a nadir frequency of 120KHz. The 1.7 milliradian resolution data is digitized to 2048 pixels per per scan line with a nadir frequency of 240KHz.

The user can process CCTs interactively on-line on a colour video display or colour film products may be provided.

The interactive software includes a cursor area location which uses the black body references to provide quantitative temperature reading together with the area in the cursor.

The most recent interactive software provides a colour density slicing for displayed images. The temperature slicing is in .5 degree increments with a maximum of 24 increments available. Colour film has provided users with information for land use and moisture content. The system has also been successfully used for determining heat loss from central heating system piping complexes as well as building roof heat loss areas.