



Figure 5: System Outputs.

The possible outputs from the C-band SAR are shown. The upper portion of the diagram shows the airborne *in flight* outputs; while the lower portion, *ground outputs*. The *in flight* radar outputs include: a dry silver image scroll, HDDT, and VCR all of the RTSP image; and an HDDT of the range-compressed, motion compensated signal data. *Ground outputs* include hardcopy using the MDA FIRE-240 or transcription to CCT from the RTSP image HDDT, or flexible processing of the signal data using the MDA G-SAR processor available on the C-SHARP system.

tions indicate the 3 dB widths. (Only the nadir mode data were taken from a slant-range image. This may account for the slightly better performance than expected for the range resolutions in the narrow swath and wide swath cases even though the usual adjustment for slant/ground range conversion was applied to the results.)

3.2 Noise Equivalent σ_o

A convenient way of characterizing the radar performance for imaging weak distributed targets is to calculate the backscattering coefficient which would lead to unity signal-to-noise ratio at the receiver output. By rearranging equation (2) for σ_o using $SNR = 1$, the *noise equivalent* σ_o can be obtained.

For narrow and wide swath modes, it is normally difficult to achieve good SNR for the far swath region because of the strong drop off in the terrain scatter and the extended range to the target. Substitution of the appropriate parameters (flying altitude of 10000 ft and VV polarization) yield far swath *noise equivalent* σ_o figures of approximately -35 dB and -28 dB for narrow and wide swath respectively. A low noise pre-amplifier is used close to the antennas on the cross-polarized channel thus reducing the loss term in (2) and improving the *noise equivalent*

Table III: CV-580 Operations Parameters for SAR Acquisitions.

Maximum Altitude (ASL)	23000 ft	7000 m
Maximum Ground Speed		
PRF/V=2.32	280 knots	144 m/s
PRF/V=2.57	254 knots	131 m/s
Minimum True Airspeed ^a		
H = 20000 ft	210 knots	108 m/s
H = 10000 ft	170 knots	87 m/s
Maximum Fuel to dry tank	6.5 hr	
Maximum Acquisition time ^b	4.5 hr	

^aThis is a still air reading. It is not atypical to have winds at 60 knots so that ground speeds could drop to 150 knots at 20000 ft.
^bMaximum acquisition times will vary radically with weather and alternates.