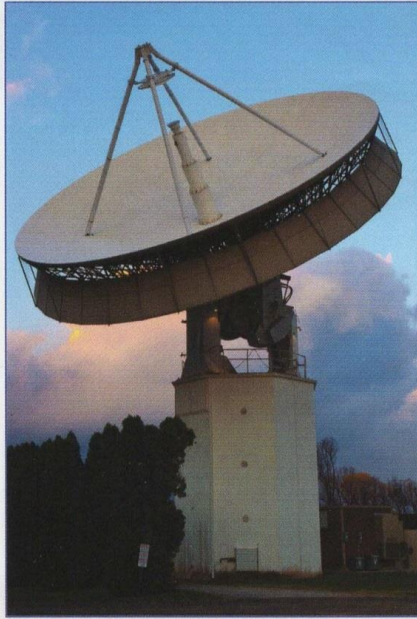


ANTENNA DRAWING EXHIBIT

1. Antenna Data & Specifications
 - a. Height above ground of tower and antenna mount: 21 meters
 - b. Distance from mount to tip of antenna: approx. 9 meters
 - c. Coordinates: North 39 10 2 West 76 53 55

60-Foot (18.3-Meter) System



Downlink	S-band	X-band
Frequency Range	2200-2400 MHz	8400-8500 MHz
Polarization	Simultaneous RHC and LHC	Simultaneous RHC and LHC
G/T	>28.3 dB/K	>38.5 dB/K
Beamwidth	0.5 deg	0.13 deg
Uplink	S-band	
Frequency Range	2025-2120 MHz	
Polarization	"On-the-fly" Selectable LHC or RHC	
Beamwidth	0.5 deg	
EIRP	>80 dBW	
Transmitter	2000 W Klystron (dual redundant)	
Antenna Pointing Control		
Program track (TLE, Spice-SPK, Chebychev, RA/DEC), S-band Autotrack, S/X-band Steptrack		
CCSDS Compliant		
Command, Ranging, Doppler & Telemetry, including Turbo (r1/2, 1/3, 1/4, 1/8), Convolutional (r1/2), Reed-Solomon, and Conv/R-S; Wide variety of modulation formats; Space Link Extension "SLE" (Fwd CLTU, RAF, & RCF services)		

2. Terrain Contour between APL 60' antenna and BWI airport (20 km away; Azimuth 87.5 degs)

