RF RADIATION HAZARD ANALYSIS

Exhibit #B

Antenna Diameter, (D) =	1.25	meters /	4.10125	Feet
Antenna Surface Area (Sa) =	1.2272	sq meters		
Subreflector Diameter (Ds) =	0.0000	centimeters		
Ku Wavelength at 14.250 GHz (LAMBDA) =	0.21038067	meters		
Power output of VPC Flange=	20.969	dB		
Path Loss to OMT (IL) =	0.6	dB		
Power at OMT, (P) =	108.87	Watts		
Antenna Gain at 14.250GHz (G) =	46.40	dBi (2 port antenna gain)		
Antenna Gain given in Power Ration, (Ges) =	4.37E+04			
Antenna Aperture Efficiency (N) =	0.650			

Region					**Radition Level**		**Hazard Assessment**
Far Field, (Rf) =	4.456	meters /	14.62	Feet	1904.449	mW/cm sq	Potential Hazard
Near Field, (Wf) =	1.857	meters /	6.092	Feet	23.066	mW/cm sq	Potential Hazard
Transition Region (Rt) Ru<Rt<Rf					equal to or less than 23.066	mW/cm sq	Potential Hazard
Between Main Reflector and Subreflector (Ws)					N/A (no subreflector)		
Main Reflector Region (Wm)					17.743	mW/cm sq	Potential Hazard
Power Density Between Reflector and Ground					8.872	mW/cm sq	Potential Hazard
Far Field Off Axis (WF)					19.044	mW/cm sq	Potential Hazard
Near Field Off Axis (WN)					0.231	mW/cm sq	Meets ANSI Requirements

Conclusion: Based on the above analysis, harmful areas of Radiation do exist in the areas around the antenna and in the path of the antenna toward the satellite that it is pointed at. The Area occupied by the general public will not exceed the ANSI limit of 1mW cm sq. because the antenna is mounted on top of the truck, which is at least 8 feet above the ground, and safety increases with look angles used by the Satellites in the United States on Dom. Sat. arch. The areas on the ground and behind the antenna are 100 times less power (20dB) when at a min. of the dia. of the reflector. This is reflected in the Off Axis figures as seen above (WF) & (WN). The SNG will be marked with the standard radiation hazard warnings, and on the antenna itself. The warning signs will warn personnel to avoid the area around and in front of the reflector when the transmitter is operating. To ensure compliance with safety limits, the earth station transmitter will be turned off and marked to remain off whenever maintenance and repair personnel are required to work in the areas of potential hazard as defined in the above study. Additionally, the earth station personnel will be trained to ensure that the antenna path is clear at all times while the transmitter is in operation. The only access to the roof of the truck is a ladder that is not accessible by the general public.

Note: See Exhibit #Ba for how the above calculations were made.

Exhibit Ba Analysis on Non-Ionizing Radiation

Antenna Diameter, (D) =	D: =	1.25 meters	D*3.281 =	4.101	Feet
Antenna Surface Area, (Sa) =	Sa: =	$\pi *\frac{D*D}{4}$	Sa =	1.227	sq meters
Subreflector Diameter, (Ds) =	Ds: =	0 cm	Ds*.3937	0.000	Inches
Area of Subreflector, (As) =	As: =	$\pi *\frac{Ds*Ds}{4}$	As=	0.000	sq meters
Center Frequency, (Cf) =	Cf: =	14.250 GHz			
Wavelength at (Cf), (Lambda) =	Lambda =	0.2103806709 meters			
Tansmit Power at HPA or VPC Flange, (P1) =	P1=	125.00 watts			
	P2:=log(p1)*10		P2=	20.969	dB
Path Loss from HPA or VPC to OMT, (IL) =	Loss: =	0.6			
	P3:= P2-Loss		P3=	20.369	OMT Pwr in dB
	P:=	$10^{\frac{P3}{10}}$	P=	108.870	OMT Pwr in watts
Antenna Gain at (Cf), (Gain) =	Gain: =	46.40 dBi			
Antenna Gain Converted to Power Ratio (Ges)=	Ges: =	$10^{\frac{Gain}{10}}$	Ges =	4.37E+04	Ratio
Antenna Aperture Efficiency, (n) =	n: =	0.6500			

Far Field (Rf) =	Rf=	$\frac{.60 * (D*D)}{Lambda}$	Rf =	4.456	meters
			Rf*3.281=	14.621	feet
Far Field Power Density (Wf) =	Wf=	$\frac{Ges*P}{4*\pi*(Rf*Rf)}$ * .1	Wf =	1904.449	mw sq cm
Near Field (Rn) =	Rn=	$\frac{(D*D)}{4*Lambda}$	Rn=	1.857	meters
			Rf*3.281=	6.092	feet
Near Field Power Density (Wn) =	Wn=	$\frac{16*n*P}{\pi*(D*D)}$ * .1	Wn =	23.066	mw sq cm
Transition Region (Rt) =	Rt =	Wn*1	Rt=	23.066	mw sq cm (Equal to or less than)
Pwr Density at Sub Reflector (Ws) =	Ws=	$\frac{2*P}{As}$ *1000	Ws =	N/A	
Main Reflector Region Pwr Density (Wm) =	Wm=	$\frac{2*P}{Sa}$ *.1	Wm =	17.743	mw sq cm
Pwr Density between main reflector and ground (Wg) =	Wg=	$\frac{P}{Sa}$ *.1	Wg =	8.872	mw sq cm
Far Field Off Axis (WF) =	WF:=	Wf*.01	WF =	19.044	mw sq cm
Near Field Off Axis (WN) =	WN:=	Wn*.01	WN =	0.231	mw sq cm