Robotics Institute
Carnegie Mellon University
5000 Forbes Avenue
Pittsburgh PA 15213 USA

November 26, 1996

Mr. Alexander J. Grossman
Economic and Political Section, Unit 4105
Embassy of the United States of America
Santiago, Chile

Dear Alex,

Greetings from the Northern Hemisphere. After lengthy debate, we've come to a decision on the communications plan. We now need your assistance in obtaining a permit for using specific frequencies to transmit data from Chile via satellite to the United States. Your letter, dated October 18, 1996, included an excerpt from a Diplomatic Note from The Ministry of Foreign Relations requesting specific information about the systems we wish to employ. Enclosed is the required information in order to apply for communication permissions from the Government of Chile.

a) Number of frequencies, indicating band(s). If specific frequencies are proposed, indicate substitute frequencies or frequency bands to find substitutes.

Item	Frequency	Comments
1	5.8 GHz (C Band)	Transmit to satellite
2	3.475 GHz (C Band)	Recieve from Satellite
3	2.4-2.4835 GHz (S Band)	Direct Sequence Spread Spectrum Radio
4	902-928 MHz (L Band)	Spread Spectrum, GFSK

Table 1: Frequency Usage

b) Band width.

	Frequency	Bandwidth
1	5.8 GHz	3.0 MHz
2	3.475 GHz	600 KHz
3	2.4-2.4835 GHz	83.5 MHz
4	902-928 MHz	26.0 MHz

Table 2: Bandwidth

c) Area for mobile stations (Region, Province, or Municipality).

Desierto de Atacama, Cordillera Domeyko.
The route which we intend to follow begins at the Llano de la Paciencia and extendsSouthward then Westward crossing the Cordillera Domeyko and ending near the Sierra Mariposas.

d) Location of fixed stations.

Fixed stations will be located along this same route at approximately 20 kilometer intervals.

e) Types of stations (base, mobile, portable, transponder, land station, etc.) and number of stations to be used.

Item	Frequency	Type of Station
1	Tx 5.8 GHz Rx 3.475 GHz	Fixed (4-5 locations during the mission)
2	2.4-2.4835 GHz	1 Mobile; 1 Fixed (4-5 locations during the mission)
3	902-928 MHz	1 Mobile; 1 Fixed (4-5 locations during the mission)

Table 3: Type of Stations

f) Maximum capacity for each kind of equipment.

	Frequency	Max. Capacity
1	5.8 GHz Tx 3.475 GHz Rx	8 Mbps Duplex
2	2.4-2.4835 GHz	4 Mbps Simplex
3	902-928 MHz	115.2 Kbps Duplex

Table 4: Max. capacilty of each Equipments

g) System configuration, diagram specifying simplex, semiduplex or duplex links.

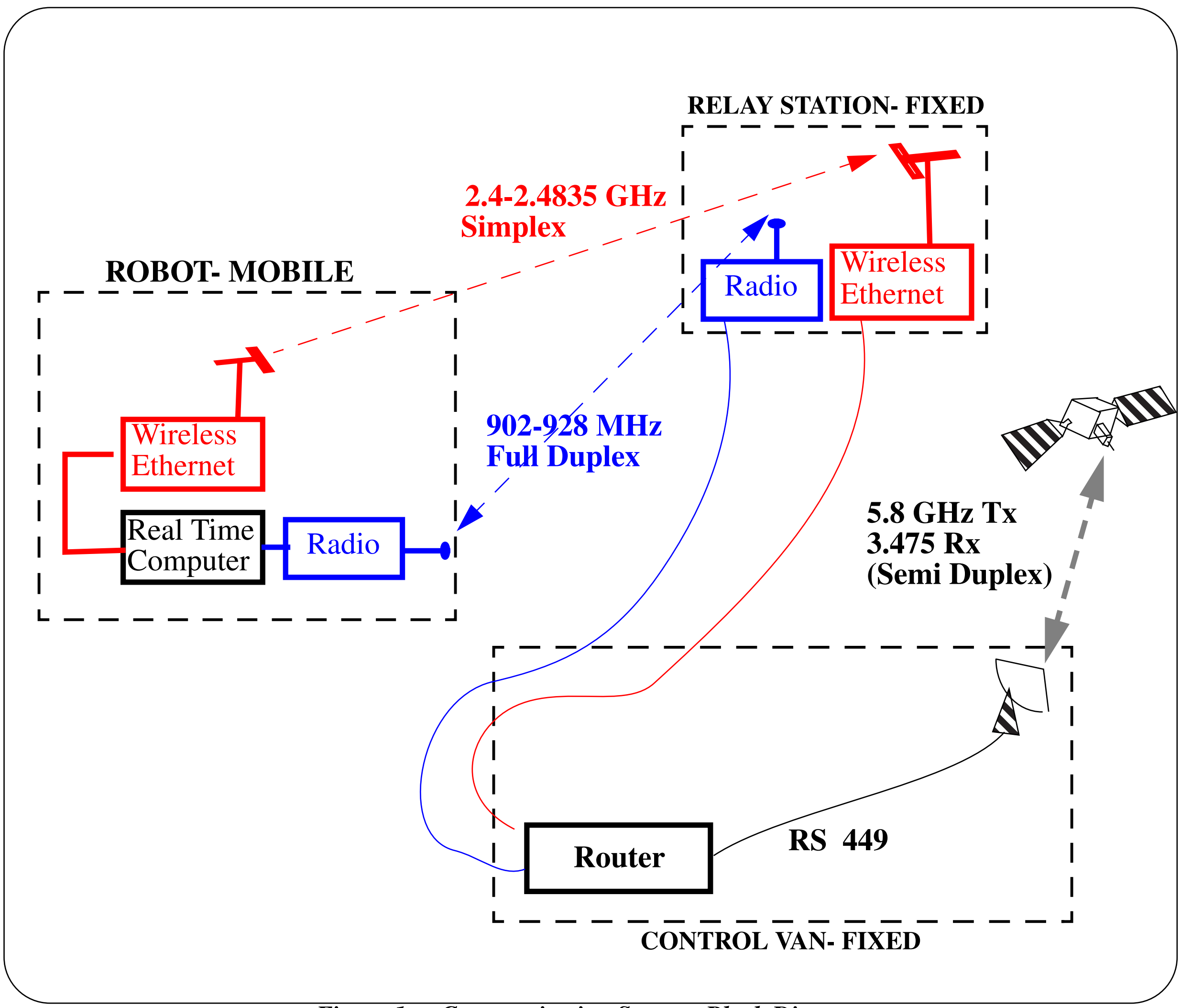

Figure 1 - Communication System- Block Diagram

h) Technical characteristics of the broadcasting system.

Item	Frequency	Comments
1	Tx 5.8 GHz Rx 3.475 GHz	Satellite Communication (Express Satellite 2 14 deg W) Modulation QPSK, 1/2 FER Power-6W@flange, 42 dB gain C band, RHCP Satellite
2	2.4-2.4835 GHz	Simplex, Direct Sequence Spread Spectrum Radio Power- Max 100 mW output 16.5 dB LHCP Planar Antenna
3	902-928 MHz	Spread Spectrum, GFSK Power- Max 1/3 W output

i) Date of beginning and end of the temporary operation.

June 01, 1997 to July 31, 1997

If you require additional information, contact me via e-mail. Another interesting note: Our sole source of funding for this project is a NASA contract, meaning we have some government affiliation. I was just wondering if this may have any effect on customs or communications permits. Thanks again for your help and patience.

Sincerely,

Michael Parris