APPENDIX J

CONESTOGA

Structural Loads

Table J-1 provides worst case limit load factors for various launch vehicle configurations. These values are usable for preliminary design.

Table J-1
Conestoga
Quasi-Static Limit Load Factors

Model	1229	1379	1620	1669	1679	3632
No. of Motors	3	4	7	7	7	7
Type of Motor	Castor IV's	Castor IV's	Castor IV's	Castor IV's	Castor IV's	Castor IV -XL's
Load Factor (g)						
Axial Compression	9.0	11.0	11.0	10.5	9.0	10.2
Lateral (any direction)	1.5	2.0	2.0	1.8	1.5	1.5

Acoustics

The qualification and acceptance acoustic test levels are given in Table J-2 for the Conestoga vehicles. These levels assume use of a 10 cm (4 in.) acoustic blanket and no payload fill effects.

Spacecraft Random Vibration

The maximum expected random vibration input at the spacecraft interface is given in Table J-3.

Mechanical Shock

Test levels representing launch vehicle induced shock levels at the payload separation plane are given in Table J-4.

Table J-2
Conestoga
Acoustic Test Levels
Inside Empty Payload Fairing
with 10 cm (4 in.) Acoustic Blanket

One-Third Octave Center Frequency (Hz)	Noise Level (dB) re: .00002 Pa	
	Qualification	Acceptance
25	103	100
32	106	103
40	108	105
50	111.5	108.5
63	116	113
80	119.5	116.5
100	122.5	119.5
125	125	122
160	127.5	124.5
200	129	126
250	130.5	127.5
315	131	128
400	131.5	128.5
500	131.5	128.5
630	131	128
800	130.5	127.5
1000	129	126
1250	127.5	124.5
1600	126	123
2000	124	121
2500	121.5	118.5
3150	119.5	116.5
4000	116.5	113.5
5000	114.5	111.5
6300	112	109
8000	109	106
10000	107	104
Overall	141	138

Table J-3
CONESTOGA
Spacecraft Random Vibration

Frequency (Hz)	ASD Level (G^2/Hz)	
	Qualification	Acceptance
20 20-90 90-500 500-2000 2000	.0038 +4 dB/oct .028 -6 dB/oct .0018	.0019 +4 dB/oct .014 -6 dB/oct .00088
Overall Level	4.8 G_{rms}	3.4 G_{rms}

Table J-4
CONESTOGA
Launch Vehicle Induced
Shock Response Spectrum
Q=10

Frequency (Hz)	Shock Response Spectrum (G)	
	Qualification	Acceptance
100-350 350-500 1000-4000	56 +8 dB/oct 2800	40 +8 dB/oct 2000