ATTACHMENT K

RAPID IV

RFP

CORE SYSTEM PERFORMANCE CHARACTERISTICS & SUBSYSTEM DETAILS

Date TBD

(TO BE SUBMITTED UPON ISSUANCE OF THE ONE-TIME DO)

Attachment K
Rapid IV Core System Performance Characteristics Part 1

Contractor
Core Spacecraft

ID		UNITS	PERFORMANCE OR DESCR PTION (alphanumeric					
	OBSERVATORY-LEVEL PERFORMANCE							
	LAUNCH VEHICLE COMPATIBILITY							
1.1.1.1	Reference Launch Vehicle Configuration							
1.1.1.2	Payload Attach Fitting							
1.1.1.3	Fairing							
1.1.1.4	Other Launch Vehicle Compatibility's							
1.1.1.x	other							
	REFERENCE ORBIT COMPAT BILITY							
1.1.2.1	Apogee Altitude	(km)						
1.1.2.2	Perigee Altitude	(km)						
1.1.2.3	Inclination	(deg)						
1.1.2.4	Other orbit compatibility's							
1.1.2.x	other							
	CLEANLINESS LEVELS ACH EVED							
1.1.3.1	Particulate							
1.1.3.2	Molecular							
1.1.3.x	other							
	DESIGN L FETIME							
1.1.4.1	Probability of Success (Ps)	(0 <= Ps <= 1.0)						
1.1.4.2	Operational Lifetime (for provided Ps)	(years)						
1.1.4.3	On Board Expendables Lifetime	(years)						
1.1.4.4	Areas of Redundancy							
1.1.4.x	other							
	RADIATION TOLERANCE							
1.1.5.1	Total Dose	(kilorads)						
1.1.5.2	Single Event Effects							
1.1.5.x	other							
	CORE SPACECRAFT PERFORMANCE							
	STRUCTURAL & MECHANICAL CHARACTERISTICS							
1.2.1.1	Shape							
1.2.1.2	Physical Dimensions	(mm)						
1.2.1.3	Primary Structure Material(s)							
1.2.1.4	Core System Mass, Launch Config. without (w/o) Payload Instr (P/L)	(kg)						
1.2.1.5	Core System Mass, Launch Config. w/o P/L, DRY	(kg)						
1.2.1.6	Maximum Payload Mass	(kg)						
1.2.1.7	Core System Lowest Structural Mode, Launch Config. with max. P/L	(Hz)						
1.2.1.8	Coordinate System Definition (Description or Graphic)							
1.2.1.9	Core SC Center of Mass Location	(mm)	X	Y	Z			
1.2.1.10	Core SC Moments of Inertia (w/o P/L)	(kg-m^2)	Ixx	Iyy	Izz			
1.2.1.11	External Payload Envelope Dimensions (in Spacecraft coordinates)	(mm)	Xmin	Xmax	Ymin	Ymax	Zmin	Zmax
1.2.1.12	Allowable Payload CG range (in Spacecraft coordinates)	(mm)	Xmin	Xmax	Ymin	Ymax	Zmin	Zmax
1.2.1.13	Maximum Payload Moments of Inertia (MOI)	(kg-m^2)	Ixx	Iyy	Izz	Ixy	Ixz	Izy
1.2.1.14	Internal Payload Envelope Availability							
1.2.1.x	other							
	POWER AND ELECTRICAL SUBSYS							
1.2.2.1	Type/Architecture							
1.2.2.2	Power Capacity full Sun	Watts (W)						
1.2.2.3	Peak Payload Power (EOL)	(W)						
1.2.2.4	Orbit Average Payload Power (EOL)	(W)						
1.2.2.5	Allowable Payload Standby Power	(W)						
1.2.2.6	Bus Voltage, Nominal Range	(V)						
1.2.2.7	Bus Voltage, Minimum	(V)						
1.2.2.8	Bus Voltage, Maximum	(V)						
1.2.2.9	Solar Array-Total Array Area	(m^2)						
1.2.2.10	Solar Array-EOL Power (total)	(W)						
1.2.2.11	Solar Array-BOL Power(total)	(W)						
1.2.2.12	Solar Array-Cell Type and No.							
1.2.2.13	Solar Array-Articulation	(axies=0,1,2,3)						
1.2.2.14	Battery-Capacity	(AHr)						
1.2.2.15	Battery-DOD	(%)						
1.2.2.16	Battery-Cell Type							
1.2.2.17	Number of batteries							
1.2.2.18	Number of cells per battery							
1.2.2.19	Battery-Fault Protection							
1.2.2.x	other							
	PROPULSION SUBSYS							
1.2.3.1	Type/Architecture							
1.2.3.2	Propellant Type							
1.2.3.3	Pressurant Type (if applicable)							
1.2.3.4	Maximum Propellant Load	(kg)						
1.2.3.5	Attitude Control Capability	(Y or N)						
1.2.3.6	Total Impulse Capability	(m/sec)						
1.2.3.x	other							
	ATTITUDE CONTROL SUBSYS							
1.2.4.1	Type/Architecture							
1.2.4.2	Spin Axis	(X, Y or Z)						

ID		UNITS	PERFORMANCE OR DESCRIPTION (alphanumeric			
1.2.4.3	Is Control System Capable of Accepting P/L Error Sensor Signal?	(Y or N)				
1.2.4.4	Orbit knowledge	(km)	In Track	Cross Track	Altitude	
1.2.4.5	Jitter Spectrum					
1.2.4.6	Pointing Accuracy	(arcsec)	Roll	Pitch	Yaw	
1.2.4.7	Pointing Stability	(arcsec/sec)				
1.2.4.8	Pointing Knowledge	(arcsec)	Roll	Pitch	Yaw	
1.2.4.9	Maximum Maneuver Rates	(deg/sec)				
1.2.4.10	Pointing Stability Time Period	(sec)				
1.2.4.11	Maximum Wheel Torque, per Wheel	(N-m)				
1.2.4.12	Gyro Saturation Limits	(deg/sec)				
1.2.4.13	Wheel's Momentum Capacity, per Wheel	(N-m-s)				
1.2.4.14	Pointing Constraints due to Solar Array Configuration					
1.2.4.15	Pointing Constraints for Thermal - Sun, Earth, Moon					
1.2.4.x	other					
	COMMAND & DATA HANDLING SUBSYS					
1.2.5.1	Type/Architecture					
1.2.5.2	Data Handling Capacity	(kb/s)				
1.2.5.3	Data Storage Capacity	(Mb)				
1.2.5.4	Data Storage EDAC					
1.2.5.5	Selectable Data Rates	(Y or N)				
1.2.5.6	Processor Architecture/Type					
1.2.5.7	On-Board Computer Capacity		Processing Speed (Mhz)	RAM (KB)	ROM (KB)	EEPROM (KB)
1.2.5.x	other					
	COMMUNICATION SUBSYS					
1.2.6.1	Receive Frequency Band (X, S, UHF, etc.)					
1.2.6.2	Receiver Bandwidth					
1.2.6.3	Transmit Frequency Band (X, S, UHF, etc.)					
1.2.6.4	Transmit Bandwidth					
1.2.6.5	EIRP	(W)				
1.2.6.6	G/T	(dB/k)				
1.2.6.7	Type of Modulation					
1.2.6.8	Range of Modulation Index					
1.2.6.9	Coding Scheme					
1.2.6.10	Ranging (tones)	(Y or N)				
1.2.6.11	2-way Doppler	(Y or N)				
1.2.6.12	Network Compatibility [STDN, DSN, TDRSS, SGLS, other]					
1.2.6.13	Antenna		TYPE (alphanumeric	GAIN (numeric)	PATTERNS (alphanumeric	RANGE OF TRAVEL (degrees)
1.2.6.14	Telemetry Transmit Rate	(kbps)				
1.2.6.15	Command Receive Rate	(kbps)				
1.2.6.16	Survival/Backup Mode Link					
1.2.6.17	Number of Transmit Channels					
1.2.6.18	Subcarrier Capability on Transmitter	(Y or N)				
1.2.6.19	Receiver Threshold					
1.2.6.20	Transmitter Power					
1.2.6.21	Amplifier Gain					
1.2.6.22	Filter Characteristics					
1.2.6.23	% of Time Transmitter can be on	%				
1.2.6.x	other					
	THERMAL CONTROL					
1.2.7.1	Type/Architecture					
1.2.7.2	Available P/L thermal capacity from Core SC (Orbit Avg.)	W				
1.2.7.3	P/L Interface Temperature Range	C				
1.2.7.4	Available P/L Thermal Field of View					
1.2.7.x	other					
	SOFTWARE SUBSYS					
1.2.8.1	Flight Development Environment					
1.2.8.2	Flight Verification Environment					
1.2.8.3	Flight Reuse/Rework	(%)				
1.2.8.4	GSE Development Environment					
1.2.8.5	GSE Verification Environment					
1.2.8.6	GSE Reuse/Rework	(%)				
1.2.8.x	other					

Attachment K

Rapid IV Subsystem Details Part 2

Contractor
Core Spacecraft

	MASS (in kg)	POWER (in W)
TOTAL OBSERVATORY (wet)		
MAXIMUM PAYLOAD ACCOMMODATION		
TOTAL SPACECRAFT (wet)		
TOTAL SPACECRAFT (dry)		
MAXIMUM PROPELLANT		

ID			MASS (in kg) (numeric)	POWER (in W) (numeric)	VENDOR (text)	MODEL (text)	QUANTITY (numeric)	DESCRIPTION (text)	HERITAGE (text)
		STRUCTURE & MECHANISMS	0	0					
2.1.1		Primary Structure							
2.1.2		Secondary Structure (fittings, fasteners,etc.)							
2.1.3		Solar Array Appendage(s)							
2.1.4		Solar Array Drive(s)							
2.1.5		Solar Array Deployment Mechanism(s)							
2.1.6		Other Appendages							
2.1.7		Other Mechanisms							
2.1.8		Balance Mass							
2.1.x		other (add as needed)							
		POWER SUBSYS	0	0					
2 2.1		Power Supply Electronics (PSE)							
2 2.2		PSE Power Switching Module							
2 2.3		PSE Battery Charge Controller							
2 2.4		Battery Cells							
2 2.5		Battery Packaging							
2 2.6		Solar Array Panels							
2 2.7		Harnesses							
2 2.x		other (add as needed)							
		PROPULSION SUBSYS	0	0					
2 3.1		Propellant Tank							
2 3.2		Thrusters/REA(s)							
2 3.3		Fill/Drain Valves							
2 3.4		Filters							
2 3.5		Harnessing							
2 3.6		Latch Valves							
2 3.7		Pressurant							
2 3.8		Structure & Brackets							
2 3.9		Tubing & Fittings							
2 3.10		Heaters & Thermostats							
2 3.11		Pressure Transducer							
2 3.x		other (add as needed)							
		ATTITUDE CONTROL SUBSYS	0	0					
2.4.1		Attitude Control Electronics							
2.4.2		Reaction Control Electronics							
2.4.3		Sensors-Inertial Reference Unit							
2.4.4		Sensors-Magnetometer(s)							
2.4.5		Sensors-Star Tracker							
2.4.6		Sensors-Coarse Sun							
2.4.7		Sensors-Fine Sun							
2.4.8		Sensors- Earth							
2.4.9		Sensors-GPS (for Altitude)							
2.4.10		Sensors-GPS (for Attitude)							
2.4.11		Actuators-Reaction Wheels							
2.4.12		Actuators-Torque Rods							
2.4.13		Actuators-Nutation Dampers							
2.4.14		Actuators-Engine Valve Driver							
2.4.15		ACS Software							
2.4.x		other (add as needed)							
		COMMAND & DATA HANDLING SUBSYS	0	0					
2 5.1		Central Processing Computer							
2 5.2		Data Recorder							
2 5.x		other (add as needed)							
		COMMUNICATION SUBSYS	0	0					
2 6.1		Antenna							
2 6.2		Diplexer							
2 6.3		Combiner							
2 6.4		Isolator							
2 6.5		Gimbal							
2 6.6		Transmitter							
2 6.7		Amplifier							
2 6.8		Modulator							
2 6.9		Demodulator							
2 6.10		Transponder							
2 6.11		Receiver							
2 6.x		other (add as needed)							
		THERMAL SUBSYS	0	0					
2.7.1		Thermostats							
2.7.2		Thermistors							
2.7.3		Radiator Panels							
2.7.4		Louvers							
2.7.5		Heat Pipes							
2.7.6		Blanketing							
2.7.7		Capillary Pump Tubes							
2.7.x		other (add as needed)							

ID			MASS (in kg) (numeric)	POWER (in W) (numeric)	VENDOR (text)	MODEL (text)	QUANTITY (numeric)	DESCRIPTION (text)	HERITAGE (text)
		FLIGHT SOFTWARE/FIRMWARE							
2 8.1		Software							
2 8.2		Firmware							
2 8.x		other (add as needed)							
		GROUND SUPPORT EQUIPMENT							
2 9.1		Electrical GSE							
2 9.2		Mechanical GSE							
2 9.x		other (add as needed)							