Exhibit I to
Contract No. xxxxxxx
Dated April 1, 2004

EXHIBIT I
INSTRUMENT DATA COLLECTION QUESTIONNAIRES

This Exhibit I consists of the following five questionnaires:

- **Optical Instrument Data Collection Questionnaire**
- **Passive Microwave/Sub-millimeter Wave Instrument Data Collection Questionnaire**
- **Active Microwave/Sub-millimeter Wave Instrument Data Collection Questionnaire**
- **Particles and Fields Instrument Data Collection Questionnaire**
- **Generic/Other Instrument Data Collection Questionnaire**

Optical Instrument Data Collection Questionnaire

Instrument Name			
Mission Name			Launch Date:
Technical Contact	Name:	Company/Division:	
	Tel No:	Email:	
Resource Contact	Name:	Company/Division:	
	Tel No:	Email:	
Mission Description:			

Instrument Class (check one below)

Planetary		**Earth Orbiting**		**Other**	

	Remote Sensing (check one below)		**Instrument Type,** e.g., camera, radiometer, SAR, magnetometer, gamma ray, mass spectrometer, radar, etc.,	
	Optical	X		
	Passive Micro/Sub Millimeter Wave			
	Active Micro/Sub Millimeter Wave			
	Particles and Fields			
	Generic/Other			

System Level Parameters & Programmatic Data (Provide costs in constant (fixed) year $. If in real year $, provide cost profile)

	System Level Cost Inputs	**Units**	**System Level Technical Parameters**	
1	Management Costs ($K)		Mission/Reliability Class (A, B, or C)	
2	System Engineering ($K)		Supplier (JPL, University or Commercial)	
3	Product Assurance ($K)		Development Schedule (Phase B/C/D in months)	
4	Integration & Test ($K)		Design Inheritance (New, Modified, Exact Copy)	
5	Total Sensor Cost ($K) – Sum of subsystem costs as shown below		Software Complexity (Straight Data Transmission, Data Compression, Data Proc, Data Interpretation	
6	Other Costs		Flight Hardware Quantity	
	Total Development Costs (Phase B/C/D) ($K) – Sum of above		Radiation Protection Requirements (rads)	
	Total FTEs			

Subsystem Level Cost Inputs (Provide costs in constant (fixed) year $. If in real year $, provide cost profile)

	Subsystem WBS Elements	**Units**	**Cost Input Notes**	
	Optics/Antenna Cost ($K)			
	Mechanical/Structure Cost ($K)			
	Thermal/Fluid Cost ($K)			
	Electronics Cost ($K)			
	Detectors Cost ($K)			
	Software Cost ($K)			
	Other Cost ($K)			
5	Total Sensor Cost ($K)			

Subsystem Level Technical Inputs (Open cells should be filled, Shaded cells are optional)

	Subsystem WBS Elements	Mass (kg)	Mat'l Type	TRL	Wave-length (um)	Max Power (W)	# of Bands/ channels	Data Rate (kbps)	Detect Type	SLOC	Ant. Area (m^2) or det array size
	Optics/Antenna										
	Mech/Structure										
	Thermal/Fluid										
	Electronics										
	Detectors										
	Software										
	Other										

Additional Comments: (provide additional information on any of the above sections. Attached top level instrument block diagram if available.)

Passive Microwave/Sub-millimeter Wave Instrument Data Collection Questionnaire

Instrument Name			
Mission Name			Launch Date:
Technical Contact	Name:	Company/Division:	
	Tel No:	Email:	
Resource Contact	Name:	Company/Division:	
	Tel No:	Email:	
Mission Description:			

Instrument Class (check one below)

	Planetary		**Earth Orbiting**		**Other**	

	Remote Sensing (check one below)		**Instrument Type,** e.g., camera, radiometer, SAR, magnetometer, gamma ray, mass spectrometer, radar, etc.,	
	Optical			
	Passive Micro/Sub Millimeter Wave	X		
	Active Micro/Sub Millimeter Wave			
	Particles and Fields			
	Generic/Other			

System Level Parameters & Programmatic Data (Provide costs in constant (fixed) year $. If in real year $, provide cost profile)

	System Level Cost Inputs	**Units**	**System Level Technical Parameters**	
1	Management Costs ($K)		Mission/Reliability Class (A, B, or C)	
2	System Engineering ($K)		Supplier (JPL, University or Commercial)	
3	Product Assurance ($K)		Development Schedule (Phase B/C/D in months)	
4	Integration & Test ($K)		Design Inheritance (New, Modified, Exact Copy)	
5	Total Sensor Cost ($K) – Sum of subsystem costs as shown below		Software Complexity (Straight Data Transmission, Data Compression, Data Proc, Data Interpretation	
6	Other Costs		Flight Hardware Quantity	
	Total Development Costs (Phase B/C/D) ($K) – Sum of above		Radiation Protection Requirements (rads)	
	Total FTEs			

Subsystem Level Cost Inputs (Provide costs in constant (fixed) year $. If in real year $, provide cost profile)

	Subsystem WBS Elements	**Units**	**Cost Input Notes**	
	Optics/Antenna Cost ($K)			
	Mechanical/Structure Cost ($K)			
	Thermal/Fluid Cost ($K)			
	Electronics Cost ($K)			
	Detectors Cost ($K)			
	Software Cost ($K)			
	Other Cost ($K)			
5	Total Sensor Cost ($K)			

Subsystem Level Technical Inputs (Open cells should be filled, Shaded cells are optional)

	Subsystem WBS Elements	Mass (kg)	Mat'l Type	TRL	Wave-length (um)	Max Power (W)	# of Bands/ channels	Data Rate (kbps)	Detect Type	SLOC	Ant. Area (m^2) or array size
	Optics/Antenna										
	Mech/structure										
	Thermal/Fluid										
	Electronics										
	Detectors										
	Software										
	Other										

Additional Comments: (provide additional information on any of the above sections. Attached top level instrument block diagram if available.)

Active Microwave/Sub-millimeter Wave Instrument Data Collection Questionnaire

Instrument Name			
Mission Name			Launch Date:
Technical Contact	Name:	Company/Division:	
	Tel No:	Email:	
Resource Contact	Name:	Company/Division:	
	Tel No:	Email:	
Mission Description:			
Instrument Class (check one below)			
	Planetary	**Earth Orbiting**	**Other**

	Remote Sensing (check one below)		**Instrument Type,** e.g., camera, radiometer, SAR, magnetometer, gamma ray, mass spectrometer, radar, etc.,	
	Optical			
	Passive Micro/Sub Millimeter Wave			
	Active Micro/Sub Millimeter Wave	X		
	Particles and Fields			
	Generic/Other			

System Level Parameters & Programmatic Data (Provide costs in constant (fixed) year $. If in real year $, provide cost profile)

	System Level Cost Inputs	**Units**	**System Level Technical Parameters**	
1	Management Costs ($K)		Mission/Reliability Class (A, B, or C)	
2	System Engineering ($K)		Supplier (JPL, University or Commercial)	
3	Product Assurance ($K)		Development Schedule (Phase B/C/D in months)	
4	Integration & Test ($K)		Design Inheritance (New, Modified, Exact Copy)	
5	Total Sensor Cost ($K) – Sum of subsystem costs as shown below		Software Complexity (Straight Data Transmission, Data Compression, Data Proc, Data Interpretation	
6	Other Costs		Flight Hardware Quantity	
	Total Development Costs (Phase B/C/D) ($K) – Sum of above		Radiation Protection Requirements (rads)	
	Total FTEs			

Subsystem Level Cost Inputs (Provide costs in constant (fixed) year $. If in real year $, provide cost profile)

	Subsystem WBS Elements	**Units**	**Cost Input Notes**	
	Optics/Antenna Cost ($K)			
	Mechanical/Structure Cost ($K)			
	Thermal/Fluid Cost ($K)			
	Electronics Cost ($K)			
	Detectors Cost ($K)			
	Software Cost ($K)			
	Other Cost ($K)			
5	Total Sensor Cost ($K)			

Subsystem Level Technical Inputs (Open cells should be filled, Shaded cells are optional)

	Subsystem WBS Elements	Mass (kg)	Mat'l Type	TRL	Wave-length (um)	Max Power (W)	# of Bands/ channels	Data Rate (kbps)	Detect Type	SLOC	Ant. Area (m^2) or array size
	Optics/Antenna										
	Mech./Structure										
	Thermal/Fluid										
	Electronics										
	Detectors										
	Software										
	Other										

Comments & Assumptions:

Particles and Fields Instrument Data Collection Questionnaire

Instrument Name			
Mission Name			Launch Date:
Technical Contact	Name:	Company/Division:	
	Tel No:	Email:	
Resource Contact	Name:	Company/Division:	
	Tel No:	Email:	
Mission Description:			

Instrument Class (check one below)

Planetary		**Earth Orbiting**		**Other**	

	Remote Sensing (check one below)		**Instrument Type,** e.g., camera, radiometer, SAR, magnetometer, gamma ray, mass spectrometer, radar, etc.,	
	Optical			
	Passive Micro/Sub Millimeter Wave			
	Active Micro/Sub Millimeter Wave			
	Particles and Fields	X		
	Generic/Other			

System Level Parameters & Programmatic Data (Provide costs in constant (fixed) year $. If in real year $, provide cost profile)

	System Level Cost Inputs	**Units**	**System Level Technical Parameters**	
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Subsystem Level Technical Inputs (Open cells should be filled, Shaded cells are optional)

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	Thermal/Fluid										
	Electronics										
	Detectors										
	Software										
	Other										

Additional Comments: (provide additional information on any of the above sections. Attached top level instrument block diagram if available.)

Generic/Other Instrument Data Collection Questionnaire

Instrument Name			
Mission Name			Launch Date:
Technical Contact	Name:	Company/Division:	
	Tel No:	Email:	
Resource Contact	Name:	Company/Division:	
	Tel No:	Email:	
Mission Description:			

Instrument Class (check one below)

Planetary		**Earth Orbiting**		**Other**	

	Remote Sensing (check one below)		**Instrument Type,** e.g., camera, radiometer, SAR, magnetometer, gamma ray, mass spectrometer, radar, etc.,	
	Optical			
	Passive Micro/Sub Millimeter Wave			
	Active Micro/Sub Millimeter Wave			
	Particles and Fields			
	Generic/Other	X		

System Level Parameters & Programmatic Data (Provide costs in constant (fixed) year $. If in real year $, provide cost profile)

	System Level Cost Inputs	**Units**	**System Level Technical Parameters**	
1	Management Costs ($K)		Mission/Reliability Class (A, B, or C)	
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	Total FTEs			

Subsystem Level Cost Inputs (Provide costs in constant (fixed) year $. If in real year $, provide cost profile)

	Subsystem WBS Elements	**Units**	**Cost Input Notes**	
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	Electronics Cost ($K)			
	Detectors Cost ($K)			
	Software Cost ($K)			
	Other Cost ($K)			
5	Total Sensor Cost ($K)			

Subsystem Level Technical Inputs (Applicable cells should be filled)

	Subsystem WBS Elements	Mass (kg)	Mat'l Type	TRL	Wave-length (um)	Max Power (W)	# of Bands/ channels	Data Rate (kbps)	Detect Type	SLOC	Ant. Area (m^2) or array size
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	Thermal/Fluid										
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	Detectors										
	Software										
	Other										

Additional Comments: (provide additional information on any of the above sections. Attached top level instrument block diagram if available.)