OCE3 (6/18/2012)

Please Note the color coding: level 1=black, level 2=red, level 3=green, level 4=blue, level 5=orange, level 6=Purple, level 7=Pink, level 8= Gray, Level 9=Brown

Component Type	Component	Composition	Cold Backup Flown Units	Hot (operating) Units	Total Flown Quantity (Hot + Cold)	Updated Mass (Kg)	Updated Mass (Kg)	List Heritage Spaceflight Missions	TRL Assessment
	OCE3 (6/18/2012)		**0**	**1**	**1**	279.157	**279.157**		
	Scan Drum and Mechanism Assembly		0	1	1	54.861	54.861		
	Scan Drum Assembly		0	1	1	40.279	40.279		
	Telescope Shield Assembly		0	1	1	20.319	20.319		
	Scan Telescope Assembly		0	1	1	15.019	**15.019**		
	Depolarizer Assembly		0	1	1	3.248	**3.248**		
Optical	**Depolarizer**	Quartz	0	4	4	0.712	**2.848**		6
Mechanical	**Depolarizer Ring**	Derlin 2700 NC010, Low Viscosity Acetal Copolymer (SS)	0	2	2	0.200	**0.400**		6
	Schmidt Plate Assembly		0	1	1	1.623	**1.623**		
Optical	**Schmidt Plate**	Fused Silica	0	1	1	1.423	**1.423**		6
Mechanical	**Schmidt Plate Ring**	Derlin 2700 NC010, Low Viscosity Acetal Copolymer (SS)	0	1	1	0.200	**0.200**		6
Optical	**Primary Mirror (200mm dia)**	Zerodur	0	1	1	1.688	**1.688**		6
	Fold Mirror Assembly		0	1	1	0.510	**0.510**		
Optical	**Fold Mirror**	Zerodur	0	1	1	0.290	**0.290**		6
Mechanical	**Fold Mirror Spider Mount**	Al	0	1	1	0.220	**0.220**		6
Mechanical	**Telescope Tube**	Al, 6061-T6	0	1	1	2.950	**2.950**		6
Mechanical	**Telescope Barrel Mount Front**	Al, 6061-T6	0	1	1	0.820	**0.820**		6
Mechanical	**Telescope Barrel Mount Rear**	Al, 6061-T6	0	1	1	4.180	**4.180**		6
Mechanical	**Scan Telescope Shield**	Al, 6061-T6	0	2	2	0.980	1.960		6
Mechanical	**Scan Telescope Bearing Plate**	Al, 6061-T6	0	2	2	1.670	3.340		6
Mechanical	**Telescope Drum Perimeter**	Al, 6061-T6	0	1	1	7.630	**7.630**		6
Mechanical	**Telescope Drum Top Plate**	Al, 6061-T6	0	1	1	4.270	**4.270**		6
Mechanical	**Telescope Drum Bottom Plate**	Al, 6061-T6	0	1	1	8.060	**8.060**		6
	Half Angle Mirror Assembly		0	1	1	0.071	**0.071**		
Optical	**Half Angle Mirror**	Zerodur	0	1	1	0.031	**0.031**		6
Mechanical	**Half Angle Mirror Holder**	Al, 6061-T6	0	1	1	0.040	**0.040**		6
	Scan Drum Mechanism Assembly		0	1	1	2.690	**2.690**		
Mechanism	**Scan Drum Motor - direct drive BDCM, dual winding**	steel/Cu	0	1	1	1.000	**1.000**		6
Mechanism	**Scan Drum Inductosyn Absolute Rotary Transducer**	alum/Cu	1	1	2	0.500	**1.000**		6
Mechanical	**Scan Drum Inductosyn Adaptor**	Al	1	1	2	0.040	**0.080**		6
Mechanical	**Scan Drum Inductosyn Plate**	Al	1	1	2	0.060	**0.120**		6

Component Type	Component	Composition	Cold Backup Flown Units	Hot (operating) Units	Total Flown Quantity (Hot + Cold)	Updated Mass (Kg)	Updated Mass (Kg)	List Heritage Spaceflight Missions	TRL Assessment
Mechanism	Scan Drum Bearing	Stainless Steel	0	2	2	0.100	**0.200**		6
Mechanical	Scan Telescope Drive shaft	Stainless Steel	0	1	1	0.290	**0.290**		6
	Half Angle Mirror Drive System		0	1	1	2.770	**2.770**		
Mechanism	Half Angle Motor - direct drive BDCM, dual winding	steel/Cu	0	1	1	0.500	**0.500**		6
Mechanism	Half Angle Inductosyn Absolute Rotary Transducer	alum/Cu	1	1	2	0.500	**1.000**		6
Mechanical	Half Angle Mirror Inductosyn Adapter	Al	1	1	2	0.030	**0.060**		6
Mechanical	Half Angle Inductosyn Plate	Al	1	1	2	0.060	**0.120**		6
Mechanical	Half Angle Inductosyn Plate Holder	Al	1	1	2	0.090	**0.180**		6
Mechanism	Half Angle Bearing	Stainless Steel	0	2	2	0.100	**0.200**		6
Mechanism	Half Angle Shaft	Stainless Steel	0	1	1	0.200	**0.200**		6
Mechanical	Half Angle Mirror Mounting Bracket	Al	0	1	1	0.510	**0.510**		6
	Image Slicer/Slit Plate Assembly		0	1	1	0.096	**0.096**		
Mechanical	Slit Plate	Si	0	1	1	0.005	**0.005**		6
Optical	250 m Channel Fold Mirror	Al	0	1	1	0.001	**0.001**		6
Optical	Fiber Pick off Fold Mirror	Al	0	1	1	0.001	**0.001**		6
Optical	250 M Fiber	Glass	0	48	48	0.001	**0.048**		6
Optical	1 Km Fiber	Glass	0	21	21	0.001	**0.021**		6
Mechanical	Fiber Mount	Al	0	1	1	0.010	**0.010**		6
Mechanical	Image Slicer Mount	Al	0	1	1	0.010	**0.010**		6
	Calibration Target Assembly		0	1	1	8.955	**8.955**		
Mechanical	Cal Plate or Paddle to mount diffuser on	Al	0	3	3	0.070	**0.210**		6
Optical	Diffuser	Spectralon	0	3	3	0.025	**0.075**		6
Mechanical	Cal Shutter (door position)	Al	0	1	1	0.510	**0.510**		6
Mechanical	Cal Shaft	Stainless Steel	0	1	1	0.240	**0.240**		6
Mechanism	Cal Stepper Motor/gear box	steel/Cu	0	1	1	0.500	**0.500**		6
Mechanical	Calibration Target Bracket	Al	0	1	1	0.190	**0.190**		6
Mechanism	Cal Resolver	steel/Cu	0	1	1	0.200	**0.200**		6
Mechanical	Cal Motor Resolver Adapter	Al	0	1	1	0.030	**0.030**		6
Mechanical	Cal Motor Resolver Housing	Al	0	1	1	0.220	**0.220**		6
Mechanism	Cal Shaft Bearing	Steel	0	2	2	0.100	**0.200**		6
Mechanical	Cal Housing	Al	0	1	1	4.600	**4.600**		6
Mechanical	Cal Housing Cover	Al	0	1	1	1.400	**1.400**		6
Mechanical	Cal Assembly Bracket	Al	0	1	1	0.310	**0.310**		6
Mechanical	Cal Assembly Bracket-2	Al	0	1	1	0.270	**0.270**		6
	`								
	Momentum Compensator Assembly		0	1	1	31.840	**31.840**		
Mechanical	Momentum Wheel	Stainless Steel	0	1	1	22.320	**22.320**		6

Component Type	Component	Composition	Cold Backup Flown Units	Hot (operating) Units	Total Flown Quantity (Hot + Cold)	Updated Mass (Kg)	Updated Mass (Kg)	List Heritage Spaceflight Missions	TRL Assessment
Mechanism	Momentum Compensation Bearing	Stainless Steel	0	2	2	0.040	**0.080**		6
Mechanism	Momentum Compensation Motor - direct drive BDCM, dual winding	Steel/cu	0	1	1	1.000	**1.000**		6
Mechanism	Momentum Compensation Resolver	Steel/cu	1	1	2	0.200	**0.400**		6
Mechanical	Momentum Compensator Motor Encoder Housing	Al	0	1	1	0.300	**0.300**		6
Mechanism	Momentum Compensation Shaft	Stainless Steel	0	1	1	0.330	**0.330**		6
Mechanical	Momentum compensator Housing	Al, 6061-T6	0	1	1	7.410	**7.410**		6
	Cradle Assembly		0	1	1	32.060	**32.060**		
	Cradle Structure		0	1	1	30.000	**30.000**		
Mechanical	Cradle Structure Trunion Support	Al, 6061-T6	0	2	2	11.870	**23.740**		6
Mechanical	Cradle Structure Base Plate	1"honeycomb, al .04 Al f/s	0	1	1	5.400	**5.400**		6
Mechanical	Cradle Structure Trunion Block	Al, 6061-T6	0	2	2	0.430	**0.860**		6
	Tilt Mechanism Assembly		0	1	1	2.060	**2.060**	SeaWIFS	
Mechanical	Tilt Wheel 1	Al	0	1	1	0.040	**0.040**		6
Mechanism	Tilt Linkage Bar Precision Assembly	Al	0	1	1	0.060	**0.060**		6
Mechanical	Tilt Mechanism Rotating Bracket	Al	0	1	1	0.400	**0.400**		6
Mechanical	Tilt Wheel 2	Al	0	1	1	0.050	**0.050**		6
Mechanical	Tilt Mechanism Fixed Bracket	Al	0	1	1	0.310	**0.310**		6
Mechanism	Tilt Crank Precision Assembly	Al	0	2	2	0.200	**0.400**		6
Mechanism	Resolver	Steel/Cu	0	2	2	0.200	**0.400**		6
Mechanism	Tilt Stepper Motor/gearbox	Steel/Cu	0	2	2	0.200	**0.400**		6
	Aft Optics/Detector Assembly		0	1	1	54.922	**54.922**		
Mechanical	C-Channel	Delrin	0	20	20	0.050	**1.000**		6
	1 Km Lens/Detector "Six Pack" Assembly		0	1	1	1.356	**1.356**		
	InGaAs Lens/Detector Assembly		0	3	3	0.183	**0.549**		
Mechanical	AViM Connector (from vendor 'Diamond')	Al	0	1	1	0.020	**0.020**		6
	Singlet Lens Assembly/Optics Tube		0	1	1	0.119	**0.119**		
Mechanical	Lens Retainer	Invar	0	2	2	0.025	**0.050**		6
Optical	L1	Fused Silica	0	1	1	0.008	**0.008**		6
Optical	Bandpass Filter	Fused Silica	0	1	1	0.003	**0.003**		6
Optical	L2	Fused Silica	0	1	1	0.008	**0.008**		6
Mechanical	Optics Tube	Al, 6061-T6	0	1	1	0.050	**0.050**		6
	InGaAS Photodiode Detector Assembly		0	1	1	0.044	**0.044**		

Component Type	Component	Composition	Cold Backup Flown Units	Hot (operating) Units	Total Flown Quantity (Hot + Cold)	Updated Mass (Kg)	Updated Mass (Kg)	List Heritage Spaceflight Missions	TRL Assessment
Detector	InGaAs PIN Photodiode		0	1	1	0.002	**0.002**		6
Detector	Preamp, FET switches, FET Driver	Al2O3, 100% analog	0	1	1	0.002	**0.002**		5
Mechanical	Detector Housing	Al	0	1	1	0.040	**0.040**		6
	Silicon Photodiode Lens/Detector Assembly		0	3	3	0.183	**0.549**		
Mechanical	AViM Connector (from vendor 'Diamond')	Al	0	1	1	0.020	**0.020**		6
	Singlet Lens Assembly/Optics Tube		0	1	1	0.119	**0.119**		
Mechanical	Lens Retainer	Invar	0	2	2	0.025	**0.050**		6
Optical	L1	Fused Silica	0	1	1	0.008	**0.008**		6
Optical	Bandpass Filter	Fused Silica	0	1	1	0.003	**0.003**		6
Optical	L2	Fused Silica	0	1	1	0.008	**0.008**		6
Mechanical	Optics Tube	Al, 6061-T6	0	1	1	0.050	**0.050**		6
	Silicon Photodiode Detector Assembly		0	1	1	0.044	**0.044**		
Detector	Silicon PhotodiodePIN Photodiode		0	1	1	0.002	**0.002**		6
Detector	Preamp, FET switches, FET Driver	Al2O3, 100% analog	0	1	1	0.002	**0.002**		5
Mechanical	Detector Housing	Al	0	1	1	0.040	**0.040**		6
Mechanical	Thermal Spacer	G-10	0	1	1	0.060	**0.060**		6
Mechanical	Fiber Optics "Clamps"	Al	0	6	6	0.003	**0.018**		6
Mechanical	Singlet Detector Array Mounting Frame	Al, 6061-T6	0	1	1	0.180	**0.180**		6
	1 Km Fiber Detector Assembly		0	1	1	2.435	**2.435**		
Mechanical	Thermal Spacer	G-10	0	1	1	0.100	**0.100**		6
Mechanical	Housing	Al	0	1	1	0.540	**0.540**		6
Mechanical	Cover	Al	0	1	1	0.500	**0.500**		6
Mechanical	Support Brackets	Al	0	2	2	0.070	**0.140**		6
	Ball/Sphere Silicon Photodiode Assembly		0	2	2	0.231	**0.462**		
	1 Km Ball/sphere Lens/Detector Assembly		0	3	3	0.075	**0.225**		
Mechanical	Lens Retainer	Invar	0	2	2	0.030	**0.060**		6
Optical	Ball Lens 1	Fused Silica	0	1	1	0.001	**0.001**		6
Optical	Bandpass Filter	Fused Silica	0	1	1	0.001	**0.001**		6
Optical	Ball Lens 2	Fused Silica	0	1	1	0.001	**0.001**		6
Mechanical	Package	Kovar	0	1	1	0.010	**0.010**		6
Detector	Silicon PIN Photodiode		0	1	1	0.002	**0.002**		6
Detector	Preamp, FET switches, FET Driver Board	100% analog	0	1	1	0.006	**0.006**		5
	Ball/Sphere InGaAs Photodiode Assembly		0	3	3	0.231	**0.693**		

Component Type	Component	Composition	Cold Backup Flown Units	Hot (operating) Units	Total Flown Quantity (Hot + Cold)	Updated Mass (Kg)	Updated Mass (Kg)	List Heritage Spaceflight Missions	TRL Assessment
	1 Km Ball/sphere Lens/Detector Assembly		0	3	3	0.075	0.225		
Mechanical	Lens Retainer	Invar	0	2	2	0.030	0.060		6
Optical	Ball Lens 1	Fused Silica	0	1	1	0.001	0.001		6
Optical	Bandpass Filter	Fused Silica	0	1	1	0.001	0.001		6
Optical	Ball Lens 2	Fused Silica	0	1	1	0.001	0.001		6
Mechanical	Package	Kovar	0	1	1	0.010	0.010		6
Detector	InGaAs PIN Photodiode		0	1	1	0.002	0.002		6
Detector	Preamp, FET switches, FET Driver Board	100% Analog	0	1	1	0.006	0.006		5
	250 M Fibers Detector Array Assembly		0	1	1	5.466	5.466		
Mechanical	Thermal Spacer	G-10	0	1	1	0.150	0.150		6
Mechanical	Housing	Al	0	1	1	0.720	0.720		6
Mechanical	Cover	Al	0	1	1	0.660	0.660		6
Mechanical	Support Brackets	Al	0	2	2	0.120	0.240		6
	Ball/Sphere Silicon Photodiode Assembly		0	4	4	0.231	0.924		
	250 M Ball/sphere Lens/Detector Assembly		0	3	3	0.075	0.225		
Mechanical	Lens Retainer	Invar	0	2	2	0.030	0.060		6
Optical	Ball Lens 1	Fused Silica	0	1	1	0.001	0.001		6
Optical	Bandpass Filter	Fused Silica	0	1	1	0.001	0.001		6
Optical	Ball Lens 2	Fused Silica	0	1	1	0.001	0.001		6
Mechanical	Package	Kovar	0	1	1	0.010	0.010		6
Detector	Silicon PIN Photodiode		0	1	1	0.002	0.002		6
Detector	Preamp, FET switches, FET Driver Board	100% analog	0	1	1	0.006	0.006		5
	Ball/Sphere InGaAs Photodiode Assembly		0	12	12	0.231	2.772		
	250 M Ball/sphere Lens/Detector Assembly		0	3	3	0.075	0.225		
Mechanical	Lens Retainer	Invar	0	2	2	0.030	0.060		6
Optical	Ball Lens 1	Fused Silica	0	1	1	0.001	0.001		6
Optical	Bandpass Filter	Fused Silica	0	1	1	0.001	0.001		6
Optical	Ball Lens 2	Fused Silica	0	1	1	0.001	0.001		6
Mechanical	Package	Kovar	0	1	1	0.010	0.010		6
Detector	InGaAs PIN Photodiode		0	1	1	0.002	0.002		6

Component Type	Component	Composition	Cold Backup Flown Units	Hot (operating) Units	Total Flown Quantity (Hot + Cold)	Updated Mass (Kg)	Updated Mass (Kg)	List Heritage Spaceflight Missions	TRL Assessment
Detector		100% Analog	0		1	0.006	**0.006**		5
	Preamp, FET switches, FET Driver Board			1					
	250 M Visible Channel		0	1	1	3.651	**3.651**		
Optical	**L1**	Glass	0	1	1	0.210	**0.210**		6
Optical	**L2**	Glass	0	1	1	0.265	**0.265**		6
Optical	**L3**	Glass	0	1	1	0.182	**0.182**		6
	Prism Assembly		0	1	1	1.160	**1.160**		
Optical	**Prism**	Glass	0	1	1	0.700	**0.700**		6
Mechanical	**Prism Housing**	Al	0	1	1	0.410	**0.410**		6
Mechanical	**Prism Housing Cover**	Al	0	1	1	0.050	**0.050**		6
Optical	**L4**	Glass	0	1	1	0.071	**0.071**		6
Optical	**L5**	Glass	0	1	1	0.235	**0.235**		6
Optical	**L6**	Glass	0	1	1	0.296	**0.296**		6
Optical	**L7**	Glass	0	1	1	0.064	**0.064**		6
Mechanical	**Forward Lens Barrel**	Al	0	1	1	0.130	**0.130**		6
Mechanical	**Aft Lens Barrel**	Al	0	1	1	0.060	**0.060**		6
	250 M CCD Detector Box		0	1	1	0.468	**0.468**		
Detector	**CCD (48x384 Pixels)**	Silicon	0	1	1	0.000	**0.000**		5
Detector	**CCD Package**	Al2O3 Ceramic	0	1	1	0.028	**0.028**		5
Detector	**PC Board - Fan out**	G10	0	1	1	0.050	**0.050**		5
Mechanical	**Housing**	Al	0	1	1	0.390	**0.390**		6
Mechanical	**250 M Channel Mount**	**Al**	0	1	1	0.510	**0.510**		6
	1 Km Blue -Red Channel Assembly		0	1	1	5.154	**5.154**		
	1 Km Channel Optics Assembly		0	1	1	3.448	**3.448**		
Optical	**L1 - blue channel**	Glass	0	1	1	0.113	**0.113**		6
Optical	**Dichroic**	Glass	0	1	1	0.055	**0.055**		6
Optical	**L2 - blue channel**	Glass	0	1	1	0.117	**0.117**		6
	Grating -blue Assembly		0	1	1	1.525	**1.525**		
Optical	**Grating -blue Channel**	Glass	0	1	1	0.055	**0.055**		6
Mechanical	**Grating -blue Housing**	Al	0	1	1	1.200	**1.200**		6
Mechanical	**Grating -blue Housing Cover**	Al	0	1	1	0.270	**0.270**		6
Optical	**L3 - blue channel**	Glass	0	1	1	0.258	**0.258**		6
Optical	**L4 - blue channel**	Glass	0	1	1	0.293	**0.293**		6
Optical	**L5 - blue channel**	Glass	0	1	1	0.140	**0.140**		6
Optical	**Grating - red channel**	Glass	0	1	1	0.055	**0.055**		6
Optical	**L3 - red channel**	Glass	0	1	1	0.212	**0.212**		6
Optical	**L4 - red channel**	Glass	0	1	1	0.264	**0.264**		6
Optical	**L5 - red channel**	Glass	0	1	1	0.156	**0.156**		6
Mechanical	**Forward Lens Barrel**	Al	0	1	1	0.100	**0.100**		6
Mechanical	**Aft Blue Lens Barrel**	Al	0	1	1	0.050	**0.050**		6
Mechanical	**Aft Red Lens Barrel**	Al	0	1	1	0.110	**0.110**		6

Component Type	Component	Composition	Cold Backup Flown Units	Hot (operating) Units	Total Flown Quantity (Hot + Cold)	Updated Mass (Kg)	Updated Mass (Kg)	List Heritage Spaceflight Missions	TRL Assessment
	Red Channel Detector Box		0	1	1	0.588	**0.588**		
Detector	**CCD (96x768 Pixels)**	Silicon	0	1	1	0.000	**0.000**		5
Detector	**CCD Package**	Kovar	0	1	1	0.040	**0.040**		5
Detector	**PC Board - Fan out**	G-10	0	1	1	0.080	**0.080**		5
Mechanical	**Housing**	Al	0	1	1	0.468	**0.468**		6
	Blue Channel Detector Box		0	1	1	0.588	**0.588**		
Detector	**CCD (96x768 Pixels)**	Silicon	0	1	1	0.000	**0.000**		5
Detector	**CCD Package**	Kovar	0	1	1	0.040	**0.040**		5
Detector	**PC Board - Fan out**	G-10	0	1	1	0.080	**0.080**		5
Mechanical	**Housing**	Al	0	1	1	0.468	**0.468**		6
Mechanical	**Grating Housing Mount**	Al	0	1	1	0.530	**0.530**		6
Mechanical	**Aft Structure Telescope Mounting Panel**	2" honeycomb Al .04 Al f/s	0	1	1	5.020	**5.020**		6
Mechanical	**Aft Structure Side Panel**	1" honeycomb, Al.04 Al f/s	0	2	2	3.780	**7.560**		6
Mechanical	**Aft Structure Back Panel**	1" honeycomb, Al.04 Al f/s	0	1	1	4.700	**4.700**		6
Mechanical	**Aft Structure Top Panel**	1" honeycomb, Al.04 Al f/s	0	1	1	3.600	**3.600**		6
Mechanical	**Aft Structure Bottom Panel**	1" honeycomb, Al.04 Al f/s	0	1	1	6.170	**6.170**		6
Mechanical	**Aft Structure Top Closeout Panel**	Al	0	2	2	2.210	**4.420**		6
Mechanical	**Trunion**	Ti	0	2	2	1.450	**2.900**		6
Mechanical	**Aft Structure Rear Cover**	Al	0	1	1	1.490	**1.490**		6
	Digitizer Box	% digital % Analog	0	1	1	11.270	**11.270**		
Electrical	**Digitizer Card**	55% 40%	0	9	9	0.590	**5.310**		6
Electrical	**Readout Control Card + 3 FPGAs**	90% 5%	0	1	1	0.590	**0.590**		6
Electrical	**LVPC**	5% 90%	0	1	1	0.590	**0.590**		6
Electrical	**CCD Card**	5% 90%	0	2	2	0.590	**1.180**		6
Electrical	**Backplane**		0	1	1	1.100	**1.100**		6
Mechanical	**Digitizer Housing**	Al	0	1	1	2.500	**2.500**		6
	Main Electronics Box/ MEB	% digital % analog	0	1	1	7.240	**7.240**		
Electrical	**Detector Data Processing Card**	90% 5%	0	1	1	1.700	**1.700**		7

Component Type	Component	Composition	Cold Backup Flown Units	Hot (operating) Units	Total Flown Quantity (Hot + Cold)	Updated Mass (Kg)	Updated Mass (Kg)	List Heritage Spaceflight Missions	TRL Assessment
Electrical	**Power Card (LVPC)**	5% 90%	0	1	1	0.590	**0.590**		7
Electrical	**Housekeeping Card + 1 FPGA**	5% 90%	0	1	1	0.590	**0.590**		6
Electrical	**Thermal Control Card**	5% 90%	0	2	2	0.590	**1.180**		6
Electrical	**CCD Control Card**	80% 15%	0	2	2	0.590	**1.180**		6
Electrical	**Backplane**	G-10	0	1	1	0.500	**0.500**		7
Mechanical	**Enclosure**	Al	0	1	1	1.500	**1.500**		6
	Mechanism Control Electronics Box/ MCEB	% digital % Analog	0	1	1	8.210	**8.210**		
Electrical	**Scan Mechanism +1 FPGA**	25% 75%	1	1	2	0.590	**1.180**		6
Electrical	**Half-angle Mirror Mechanism + 1 FPGA**	25% 75%	1	1	2	0.590	**1.180**		6
Electrical	**Momentum Compensation Mechanism +1 FPGA**	25% 75%	1	1	2	0.590	**1.180**		6
Electrical	**Tilt Mechanism**	25% 75%	0	1	1	0.590	**0.590**		6
Electrical	**Calibration Mechanism**	25% 75%	0	1	1	0.590	**0.590**		6
Electrical	**LVPC**	5% 95%	0	1	1	0.590	**0.590**		6
Electrical	**Backplane**		0	1	1	0.800	**0.800**		6
Mechanical	**Enclosure**	Al	0	1	1	2.100	**2.100**		6
Contaminatior	**Purge and Venting**	SS	0	1	1	2.000	**2.000**		6
	Harness (length)		0	1	1	18.473	**18.473**		
Harness	**Digitizer Box To CCDs**	TSP24AWG	0	1	1	0.900	**0.916**		7
Harness	**Digitizer Box to Photodiodes**	TSP24AWG	0	1	1	1.363	**1.363**		7
Harness	**MEB to Digitizer Box**	RS422	0	1	1	0.058	**0.058**		7
Harness	**MEB to Digitizer Box**	Power	0	1	1	0.021	**0.021**		
Harness	**MEB to Mechanism Control Box**	RS422	0	1	1	0.068	**0.068**		7
Harness	**MEB to Mechanism Control Box**	Power	0	1	1	0.035	**0.035**		7
Harness	**Ops Heaters to MEB (14 Heaters)**	TSP24AWG	0	1	1	0.315	**0.315**		7
Harness	**Temp Sensors to MEB (14 Sensors)**	analog	0	1	1	0.705	**0.705**		7
Harness	**MEB to CCDs**	TSP24AWG	0	1	1	0.095	**0.095**		7
Harness	**MEB to Digitizer Box**	TSP24AWG	0	1	1	0.107	**0.107**		7
Harness	**Scan Motor to Mechanism Control Box**	Power	0	1	1	1.814	**1.814**		7
Harness	**Inductosyn® Absolute rotary resolver to Mechanism Control Box**	LVDS	0	1	1	0.265	**0.265**		7
Harness	**Half Angle Motor to Mechanism Control Box**	Power	0	1	1	1.591	**1.591**		7
Harness	**Inductosyn® Absolute rotary resolver to Mechanism Control Box**	LVDS	0	1	1	0.232	**0.232**		7

Component Type	Component	Composition	Cold Backup Flown Units	Hot (operating) Units	Total Flown Quantity (Hot + Cold)	Updated Mass (Kg)	Updated Mass (Kg)	List Heritage Spaceflight Missions	TRL Assessment
Harness	Momentum Compensation Mechanism Motor to Mechanism Control Box	Power	0	1	1	1.814	**1.814**		7
Harness	Momentum Compensation Mechanism Resolver to Mechanism Control Box	LVDS	0	1	1	0.265	**0.265**		7
Harness	Tilt Stepper Motor to Mechanism Control Box	Power	0	1	1	0.617	**0.617**		7
Harness	Tilt Resolver to Mechanism Control Box	LVDS	0	1	1	0.115	**0.115**		7
Harness	Calibration Mechanism Motor to Mechanism Control Box	Power	0	1	1	0.450	**0.450**		7
Harness	Calibration Mechanism Resolver to Mechanism Control Box	LVDS	0	1	1	0.083	**0.083**		8
Harness	MEB to S/C Bulk Head (1m)	1553	0	1	1	0.080	**0.080**		7
Harness	MEB to S/C Bulk Head (1m)	SpW + 1pps	0	1	1	0.480	**0.480**		7
Harness	MEB to S/C Bulk Head (1m)	Power	0	1	1	0.180	**0.180**		7
Harness	Survival Heaters to S/C (0.7m)		1	1	2	3.402	**6.804**		7
	Thermal Assembly		0	1	1	44.670	**44.670**		
Thermal	Ammonia CCHPs on Silicon PIN/Preamp Thermal Boxes (1 m; 1.27 cm diameter)	Al	0	4	4	0.2	**0.800**		7
Thermal	Ammonia CCHP Header for Silicon PIN/Preamp Thermal Boxes (3 m; 2.54 cm diameter)	Al	0	2	2	1.2	**2.400**		7
Thermal	Ammonia CCHPs on InGaAs/Preamp Thermal Boxes (2.2 m; 1.27 cm diameter)	Al	0	1	1	0.44	**0.440**		7
Thermal	Ammonia CCHP Header for InGaAs/Preamp Thermal Boxes (2 m; 2.54 cm diameter)	Al	0	2	2	0.8	**1.600**		7
Thermal	Ammonia CCHPs on MEB, MCEB and Digtizers (2.5 m; 2.54 cm diameter)	Al	0	2	2	1	**2.000**		7
	Radiator Assembly		0	1	1	24.283	**24.283**		
Thermal	Silicon PIN/Preamp Radiator (0.0893 m2 footprint; 2.54 mm thick aluminum)	Al	0	1	1	1.206	**1.206**		7
Thermal	Silicon PIN/Preamp Radiator AZW-LA-II white paint (0.0893m2 footprint)		0	1	1	0.133	**0.133**		9
Thermal	InGaAs PIN/Preamp Radiator (0.545 m2 footprint; 2.54 mm thick aluminum)	Al	0	1	1	7.371	**7.371**		7
Thermal	InGaAs PIN/Preamp Radiator AZW-LA-II white paint (0.545 m2 footprint)		0	1	1	0.818	**0.818**		9

Component Type	Component	Composition	Cold Backup Flown Units	Hot (operating) Units	Total Flown Quantity (Hot + Cold)	Updated Mass (Kg)	Updated Mass (Kg)	List Heritage Spaceflight Missions	TRL Assessment
Thermal	MEB, MCEB and Digtizer Radiator (0.634 m2 footprint; 2.54 mm thick aluminum)	Al	0	1	1	8.574	**8.574**		7
Thermal	MEB, MCEB and Digtizer Radiator AZW-LA-II white paint (0.634 m2 footprint)		0	1	1	0.951	**0.951**		9
Thermal	Ammonia CCHP Spreaders on Silicon PIN/Preamp Radiator (1.2 m; 1.27 cm diameter)	Al	0	2	2	0.24	**0.480**		7
Thermal	Ammonia CCHP Spreaders on InGaAs PIN/Preamp Radiator (1.2 m; 1.27 cm diameter)	Al	0	4	4	0.24	**0.960**		7
Thermal	Ammonia CCHP Spreaders on MEB, MCEB & Digtizers Radiator (1.2 m; 1.27 cm diameter)	Al	0	5	5	0.24	**1.200**		7
Mechanical	Radiator Bracket Front	Al	0	1	1	1.05	**1.050**		6
Mechanical	Radiator Bracket Rear	Al	0	1	1	1.44	**1.440**		6
Mechanical	Radiator_Thermal_Spacer	G10	0	5	5	0.02	**0.100**		6
Thermal	Copper straps for CCDs (3.8 cm x 7.62 cm x 0.508 cm)	Cu	0	3	3	0.132	**0.396**		7
Thermal	Silicon PIN/Preamp Thermal Boxes (aluminum)	Al	0	2	2	0.91	**1.820**		7
Thermal	InGaAs/Preamp Thermal Boxes (aluminum)	Al	0	2	2	0.91	**1.820**		7
Thermal	CCD Thermal Sharing Plate (5.04 cm x 5.04 cm x 0.2 cm; aluminum)	Al	0	1	1	0.14	**0.140**		7
Thermal	AZ93 white paint on Drum Assembly/Telescope (1 m2)		0	1	1	0.15	**0.150**		9
Thermal	Z306 black paint on optics enclosure interior (1.121 m2)		0	1	1	0.17	**0.170**		9
Thermal	Z306 black paint on and Drum Assembly/Telescope Interior (1 m2)		0	1	1	0.15	**0.150**		9
Thermal	MLI -- Silicon PIN/Preamp Radiator backside (0.128 m2)		0	1	1	0.08	**0.080**		9
Thermal	MLI -- InGaAs PIN/Preamp Radiator backside (0.545 m2)		0	1	1	0.327	**0.327**		9
Thermal	MLI -- MEB, MCEB and Digtizer Radiator backside (0.634 m2)		0	1	1	0.38	**0.380**		9
Thermal	MLI - Fiber Optics Enclosure, Thermal Boxes and CCHPs (5.5 m2)		0	1	1	3.3	**3.300**		9

Component Type	Component	Composition	Cold Backup Flown Units	Hot (operating) Units	Total Flown Quantity (Hot + Cold)	Updated Mass (Kg)	Updated Mass (Kg)	List Heritage Spaceflight Missions	TRL Assessment
Thermal	MLI - Optics Enclosure (1.1 m2)		0	1	1	0.66	**0.660**		9
Thermal	MLI - Detectors internal to Optics Enclosure (0.24 m2)		0	1	1	0.144	**0.144**		9
Thermal	MLI - Cradle (1.45 m2)		0	1	1	0.87	**0.870**		9
Thermal	MLI - MEB and MCEB (0.486 m2)		0	1	1	0.291	**0.291**		9
Thermal	MLI - Digitizers (1.215 m2)		0	1	1	0.728	**0.728**		9
Thermal	Velcro, buttons, adhesive, etc. for MLI		0	1	1	0.503	**0.503**		9
Thermal	Op Heaters	Kapton Film 5.1 cm x 6.4 cm	17	17	34	0.002	**0.068**		9
Thermal	Thermostats (Op Heaters)	Honeywell 3100 Series	20	20	40	0.006	**0.240**		9
Thermal	Survival Heaters	Kapton Film 5.1 cm x 6.4 cm	25	25	50	0.002	**0.100**		9
Thermal	Thermostats (Survival Heaters)	Honeywell 3100 Series	50	50	100	0.006	**0.600**		9
Thermal	Thermistors/Platinum RTDs (Op heater control and telemetry)		30	30	60	0.001	**0.060**		9
Thermal	Adhesive for Heaters, Thermostats and Thermistors and Al Tape for Heaters		0	1	1	0.15	**0.150**		9
	5% misc Hardware		0	1	1	13.277	**13.611**		

Component Type	Component	Composition	Cold Backup Flown Units	Hot (operating) Units	Total Flown Quantity (Hot + Cold)	Updated Mass (Kg)	Updated Mass (Kg)	List Heritage Spaceflight Missions	TRL Assessment

OCE3 (6/18/2012)

Please Note the color coding: level 1=black, lev

Component	Modeled (c), Eng Jud (EJ), Weighed (w), Customer Impact (CI)	Comments
OCE3 (6/18/2012)		
Scan Drum and Mechanism Assembly		
Scan Drum Assembly		
Telescope Shield Assembly		
Scan Telescope Assembly		
Depolarizer Assembly		
Depolarizer	C	
Depolarizer Ring	C	
Schmidt Plate Assembly		
Schmidt Plate	C	
Schmidt Plate Ring	C	
Primary Mirror (200mm dia)	C	
Fold Mirror Assembly		
Fold Mirror	C	
Fold Mirror Spider Mount	C	
Telescope Tube	C	
Telescope Barrel Mount Front	C	
Telescope Barrel Mount Rear	C	
Scan Telescope Shield	C	
Scan Telescope Bearing Plate	C	
Telescope Drum Perimeter	C	
Telescope Drum Top Plate	C	
Telescope Drum Bottom Plate	C	
Half Angle Mirror Assembly		
Half Angle Mirror	C	
Half Angle Mirror Holder	C	
Scan Drum Mechanism Assembly		
Scan Drum Motor - direct drive BDCM, dual winding	EJ	
Scan Drum Inductosyn Absolute Rotary Transducer	EJ	
Scan Drum Inductosyn Adaptor	EJ	
Scan Drum Inductosyn Plate	EJ	

Component	Modeled (c), Eng Jud (EJ), Weighed (w), Customer Impact (CI)	Comments
Scan Drum Bearing	EJ	
Scan Telescope Drive shaft	C	
Half Angle Mirror Drive System		
Half Angle Motor - direct drive BDCM, dual winding	EJ	
Half Angle Inductosyn Absolute Rotary Transducer	EJ	
Half Angle Mirror Inductosyn Adapter	C	
Half Angle Inductosyn Plate	C	
Half Angle Inductosyn Plate Holder	C	
Half Angle Bearing	EJ	
Half Angle Shaft	EJ	
Half Angle Mirror Mounting Bracket	C	
Image Slicer/Slit Plate Assembly		
Slit Plate	EJ	
250 m Channel Fold Mirror	EJ	
Fiber Pick off Fold Mirror	C	
250 M Fiber	C	
1 Km Fiber	C	
Fiber Mount	EJ	
Image Slicer Mount	EJ	
Calibration Target Assembly		
Cal Plate or Paddle to mount diffuser on	EJ	
Diffuser	EJ	
Cal Shutter (door position)	C	
Cal Shaft	C	
Cal Stepper Motor/gear box	EJ	
Calibration Target Bracket	C	
Cal Resolver	EJ	
Cal Motor Resolver Adapter	C	
Cal Motor Resolver Housing	C	
Cal Shaft Bearing	EJ	
Cal Housing	C	
Cal Housing Cover	C	
Cal Assembly Bracket	C	
Cal Assembly Bracket-2	C	
`		
Momentum Compensator Assembly		
Momentum Wheel	C	

Component	Modeled (c), Eng Jud (EJ), Weighed (w), Customer Impact (CI)	Comments
Momentum Compensation Bearing	EJ	
Momentum Compensation Motor - direct drive BDCM, dual winding	EJ	
Momentum Compensation Resolver	EJ	
Momentum Compensator Motor Encoder Housing	C	
Momentum Compensation Shaft	EJ	
Momentum compensator Housing	C	
Cradle Assembly		
Cradle Structure		
Cradle Structure Trunion Support	EJ	
Cradle Structure Base Plate	C	
Cradle Structure Trunion Block	C	
Tilt Mechanism Assembly		
Tilt Wheel 1	C	
Tilt Linkage Bar Precision Assembly	EJ	
Tilt Mechanism Rotating Bracket	C	
Tilt Wheel 2	C	
Tilt Mechanism Fixed Bracket	C	
Tilt Crank Precision Assembly	EJ	
Resolver	EJ	
Tilt Stepper Motor/gearbox	EJ	
Aft Optics/Detector Assembly		
C-Channel	EJ	
1 Km Lens/Detector "Six Pack" Assembly		
InGaAs Lens/Detector Assembly		
AViM Connector (from vendor 'Diamond')	C	
Singlet Lens Assembly/Optics Tube		
Lens Retainer	EJ	
L1	C	
Bandpass Filter	C	
L2	C	
Optics Tube	C	
InGaAS Photodiode Detector Assembly		

Component	Modeled (c), Eng Jud (EJ), Weighed (w), Customer Impact (CI)	Comments
InGaAs PIN Photodiode	EJ	
Preamp, FET switches, FET Driver	EJ	
Detector Housing	C	
Silicon Photodiode Lens/Detector Assembly		
	C	
AViM Connector (from vendor 'Diamond')		
Singlet Lens Assembly/Optics Tube		
Lens Retainer	EJ	
L1	C	
Bandpass Filter	C	
L2	C	
Optics Tube	C	
Silicon Photodiode Detector Assembly		
Silicon PhotodiodePIN Photodiode	EJ	
Preamp, FET switches, FET Driver	EJ	
Detector Housing	C	
Thermal Spacer	EJ	
Fiber Optics "Clamps"	C	
Singlet Detector Array Mounting Frame	C	
1 Km Fiber Detector Assembly		
Thermal Spacer	EJ	
Housing	C	
Cover	C	
Support Brackets	C	
Ball/Sphere Silicon Photodiode Assembly		
1 Km Ball/sphere Lens/Detector Assembly		
Lens Retainer	EJ	
Ball Lens 1	C	
Bandpass Filter	C	
Ball Lens 2	EJ	
Package	EJ	
Silicon PIN Photodiode	EJ	
	EJ	
Preamp, FET switches, FET Driver Board		
Ball/Sphere InGaAs Photodiode Assembly		

Component	Modeled (c), Eng Jud (EJ), Weighed (w), Customer Impact (CI)	Comments
1 Km Ball/sphere Lens/Detector Assembly		
Lens Retainer	EJ	
Ball Lens 1	C	
Bandpass Filter	C	
Ball Lens 2	C	
Package	EJ	
InGaAs PIN Photodiode	EJ	
	EJ	
Preamp, FET switches, FET Driver Board		
250 M Fibers Detector Array Assembly		
Thermal Spacer	EJ	
Housing	C	
Cover	C	
Support Brackets	C	
Ball/Sphere Silicon Photodiode Assembly		
250 M Ball/sphere Lens/Detector Assembly		
Lens Retainer	EJ	
Ball Lens 1	C	
Bandpass Filter	C	
Ball Lens 2	C	
Package	EJ	
Silicon PIN Photodiode	EJ	
Preamp, FET switches, FET Driver Board	EJ	
Ball/Sphere InGaAs Photodiode Assembly		
250 M Ball/sphere Lens/Detector Assembly		
Lens Retainer	EJ	
Ball Lens 1	C	
Bandpass Filter	C	
Ball Lens 2	C	
Package	EJ	
InGaAs PIN Photodiode	EJ	

Component	Modeled (c), Eng Jud (EJ), Weighed (w), Customer Impact (CI)	Comments
	EJ	
Preamp, FET switches, FET Driver Board		
250 M Visible Channel		
L1	C	
L2	C	
L3	C	
Prism Assembly		
Prism	C	
Prism Housing	C	
Prism Housing Cover	C	
L4	C	
L5	C	
L6	C	
L7	C	
Forward Lens Barrel	C	
Aft Lens Barrel	C	
250 M CCD Detector Box		
CCD (48x384 Pixels)	C	gy, cutom design for the application
CCD Package	EJ	COTS item, just not qualified
PC Board - Fan out	EJ	gy, cutom design for the application
Housing	C	m thick for radiation
250 M Channel Mount	C	
1 Km Blue -Red Channel Assembly		
1 Km Channel Optics Assembly		
L1 - blue channel	C	
Dichroic	C	
L2 - blue channel	C	
Grating -blue Assembly		
Grating -blue Channel	C	
Grating -blue Housing	C	
Grating -blue Housing Cover	C	
L3 - blue channel	C	
L4 - blue channel	C	
L5 - blue channel	C	
Grating - red channel	C	
L3 - red channel	C	
L4 - red channel	C	
L5 - red channel	C	
Forward Lens Barrel	C	
Aft Blue Lens Barrel	C	
Aft Red Lens Barrel	C	

Component	Modeled (c), Eng Jud (EJ), Weighed (w), Customer Impact (CI)	Comments
Red Channel Detector Box		
CCD (96x768 Pixels)	C	gy, cutom design for the application
CCD Package	EJ	OTS item, just not qualified
PC Board - Fan out	EJ	gy, cutom design for the application
Housing	C	m thick for radiation
Blue Channel Detector Box		
CCD (96x768 Pixels)	C	gy, cutom design for the application
CCD Package	EJ	OTS item, just not qualified
PC Board - Fan out	EJ	gy, cutom design for the application
Housing	C	m thick for radiation
Grating Housing Mount	C	
Aft Structure Telescope Mounting Panel	C	
Aft Structure Side Panel	C	
Aft Structure Back Panel	C	
Aft Structure Top Panel	C	
Aft Structure Bottom Panel	C	
Aft Structure Top Closeout Panel	C	
Trunion	C	
Aft Structure Rear Cover	C	
Digitizer Box		
Digitizer Card	EJ	
Readout Control Card + 3 FPGAs	EJ	
LVPC	EJ	
CCD Card	EJ	
Backplane	EJ	
Digitizer Housing	EJ	
Main Electronics Box/ MEB		
Detector Data Processing Card	EJ	

Component	Modeled (c), Eng Jud (EJ), Weighed (w), Customer Impact (CI)	Comments
Power Card (LVPC)	EJ	
Housekeeping Card + 1 FPGA	EJ	
Thermal Control Card	EJ	
CCD Control Card	EJ	
Backplane	EJ	
Enclosure	EJ	
Mechanism Control Electronics Box/ MCEB		
Scan Mechanism +1 FPGA	EJ	
Half-angle Mirror Mechanism + 1 FPGA	EJ	
Momentum Compensation Mechanism +1 FPGA	EJ	
Tilt Mechanism	EJ	
Calibration Mechanism	EJ	
LVPC	EJ	
Backplane	EJ	
Enclosure	EJ	
Purge and Venting	C	
Harness (length)		
Digitizer Box To CCDs	EJ	
Digitizer Box to Photodiodes	EJ	
MEB to Digitizer Box	EJ	
MEB to Digitizer Box		
MEB to Mechanism Control Box	EJ	
MEB to Mechanism Control Box	EJ	
Ops Heaters to MEB (14 Heaters)	EJ	
Temp Sensors to MEB (14 Sensors)	EJ	
MEB to CCDs	EJ	
MEB to Digitizer Box	EJ	
Scan Motor to Mechanism Control Box	EJ	
Inductosyn® Absolute rotary resolver to Mechanism Control Box	EJ	
Half Angle Motor to Mechanism Control Box	EJ	
Inductosyn® Absolute rotary resolver to Mechanism Control Box	EJ	

Component	Modeled (c), Eng Jud (EJ), Weighed (w), Customer Impact (CI)	Comments
Momentum Compensation Mechanism Motor to Mechanism Control Box	EJ	
Momentum Compensation Mechanism Resolver to Mechanism Control Box	EJ	
Tilt Stepper Motor to Mechanism Control Box	EJ	
Tilt Resolver to Mechanism Control Box	EJ	
Calibration Mechanism Motor to Mechanism Control Box	EJ	
Calibration Mechanism Resolver to Mechanism Control Box	EJ	
MEB to S/C Bulk Head (1m)	EJ	
MEB to S/C Bulk Head (1m)	EJ	
MEB to S/C Bulk Head (1m)	EJ	
Survival Heaters to S/C (0.7m)	EJ	
Thermal Assembly		
Ammonia CCHPs on Silicon PIN/Preamp Thermal Boxes (1 m; 1.27 cm diameter)	EJ	
Ammonia CCHP Header for Silicon PIN/Preamp Thermal Boxes (3 m; 2.54 cm diameter)	EJ	
Ammonia CCHPs on InGaAs/Preamp Thermal Boxes (2.2 m; 1.27 cm diameter)	EJ	
Ammonia CCHP Header for InGaAs/Preamp Thermal Boxes (2 m; 2.54 cm diameter)	EJ	
Ammonia CCHPs on MEB, MCEB and Digtizers (2.5 m; 2.54 cm diameter)	EJ	
Radiator Assembly		
Silicon PIN/Preamp Radiator (0.0893 m2 footprint; 2.54 mm thick aluminum)	EJ	
Silicon PIN/Preamp Radiator AZW-LA-II white paint (0.0893m2 footprint)	EJ	
InGaAs PIN/Preamp Radiator (0.545 m2 footprint; 2.54 mm thick aluminum)	EJ	
InGaAs PIN/Preamp Radiator AZW-LA-II white paint (0.545 m2 footprint)	EJ	

Component	Modeled (c), Eng Jud (EJ), Weighed (w), Customer Impact (CI)	Comments
MEB, MCEB and Digtizer Radiator (0.634 m2 footprint; 2.54 mm thick aluminum)	EJ	
MEB, MCEB and Digtizer Radiator AZW-LA-II white paint (0.634 m2 footprint)	EJ	
Ammonia CCHP Spreaders on Silicon PIN/Preamp Radiator (1.2 m; 1.27 cm diameter)	EJ	
Ammonia CCHP Spreaders on InGaAs PIN/Preamp Radiator (1.2 m; 1.27 cm diameter)	EJ	
Ammonia CCHP Spreaders on MEB, MCEB & Digtizers Radiator (1.2 m; 1.27 cm diameter)	EJ	
Radiator Bracket Front	C	
Radiator Bracket Rear	C	
Radiator_Thermal_Spacer	C	
Copper straps for CCDs (3.8 cm x 7.62 cm x 0.508 cm)	EJ	
Silicon PIN/Preamp Thermal Boxes (aluminum)	EJ	
InGaAs/Preamp Thermal Boxes (aluminum)	EJ	
CCD Thermal Sharing Plate (5.04 cm x 5.04 cm x 0.2 cm; aluminum)	EJ	
AZ93 white paint on Drum Assembly/Telescope (1 m2)	EJ	
Z306 black paint on optics enclosure interior (1.121 m2)	EJ	
Z306 black paint on and Drum Assembly/Telescope Interior (1 m2)	EJ	
MLI -- Silicon PIN/Preamp Radiator backside (0.128 m2)	EJ	
MLI -- InGaAs PIN/Preamp Radiator backside (0.545 m2)	EJ	
MLI -- MEB, MCEB and Digtizer Radiator backside (0.634 m2)	EJ	
MLI - Fiber Optics Enclosure, Thermal Boxes and CCHPs (5.5 m2)	EJ	

Component	Modeled (c), Eng Jud (EJ), Weighed (w), Customer Impact (CI)	Comments
MLI - Optics Enclosure (1.1 m2)	EJ	
MLI - Detectors internal to Optics Enclosure (0.24 m2)	EJ	
MLI - Cradle (1.45 m2)	EJ	
MLI - MEB and MCEB (0.486 m2)	EJ	
MLI - Digitizers (1.215 m2)	EJ	
Velcro, buttons, adhesive, etc. for MLI	EJ	
Op Heaters	EJ	
Thermostats (Op Heaters)	EJ	
Survival Heaters	EJ	
Thermostats (Survival Heaters)	EJ	
Thermistors/Platinum RTDs (Op heater control and telemetry)	EJ	
Adhesive for Heaters, Thermostats and Thermistors and Al Tape for Heaters	EJ	

5% misc Hardware

Component	Modeled (c), Eng Jud (EJ), Weighed (w), Customer Impact (CI)	Comments