# Robert Stobie Spectrograph – Near Infrared (RSS-NIR) Project Funding, Spending, and Budget Detail



# Mid-Term Review May 2009









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### PROJECT BUDGET, SPENDING, AND FUNDING

**Budget.** The estimated cost of the RSS-NIR is \$5,811,047. This includes \$446,216 spent through March plus an estimate to complete of \$5,364,831. The budget, without contingency, is summarized in **Table 1**.

**Table 1.** RSS-NIR Budget without contingency.

Spending to date (3/31/09)	\$446,216
Budget Estimate (04/09-03/12)	\$5,364,831
INSTRUMENT COST	\$5,811,047

The budget does not include the purchase of the Fabry-Perot etalon and controller. In April, a ROM estimate was received from ICOS for an etalon with water free silica (Infrasil 302) glass and a controller in the amount of \$271,920. A request has been submitted to the NSF for a 10% increase in their funding support through the MRI program. The project hopes to have an answer by July 2009. An informal agreement has been made with Ted Williams at Rutgers University to fund the purchase of the controller. Combined, this will provide for the purchase. The Rutgers funding is contingent upon receiving the NSF funding. The purchase of the etalon brings the total cost of the RSS-NIR is \$6,082,967 without contingency.

**Table 2.** RSS-NIR Total Cost with Fabry-Perot

Total Instrument Cost	\$5,811,047
Fabry-Perot w/ controller ROM	\$271,920
INSTRUMENT W/ ETALON	\$6,082,967

The formal start to the project was in July 2008. Its duration is 45 months, including 4 months of schedule reserve, and ends March 2012. Project years run July 1 to June 30. We are in the 4<sup>th</sup> quarter of Project Year 1. Financial status and progress reports are submitted quarterly David Buckley, SALT Project Scientist

The budget was developed per the Work Breakdown System described in section 6.6. Each WBS elements represents a subsystem with a deliverable. The exceptions are project administration; integration, verification, and testing; and commissioning, which represent project management and phases of the project.

**Spending.** Through March 2009, \$446,216 has been spent on the project leaving a balance of \$5,364,831. The Department of Astronomy/Space Astronomy Lab tracked project spending prior to July 1, 2008. Spending through then was \$59,773. Since then, the Space Science and Engineering Center has been responsible for the project accounting. **Table 3** summarizes the spending and balance remaining.

**Table 3.** RSS-NIR Spending Summary

Funding	\$5,811,047
Spending prior to 7/1/08	\$59,733
Spending post to 6/30/08	\$386,483
BALANCE	\$5,364,831

**Table 4** provides a monthly breakdown of spending since July by cost category.

**Table 4.** RSS-NIR Monthly Spending Since July 2008

RSS-NIR SUMMARY	PROJECT YEAR 1									
KSS-NIK SUMMAKT	2008				2009			PROJECT TOTAL		
Monthly Spending	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL
LABOR	\$5,604	\$12,037	\$7,808	\$35,427	\$20,938	\$21,268	\$35,354	\$40,747	\$58,251	\$237,433
MATERIAL	\$0	\$0	\$4,244	\$5,926	\$0	\$965	\$5,005	\$862	\$4,524	\$21,525
CAPITAL EQUIPMENT	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,250	\$6,250
TRAVEL	\$0	\$1,006	\$647	\$4,871	(\$596)	\$324	\$0	\$2,781	\$643	\$9,675
SUBCONTRACTS	\$0	\$54,146	\$4,980	\$4,610	\$13,211	\$4,981	\$7,237	\$4,461	\$4,818	\$98,443
TUITION REMISSION	\$0	\$0	\$889	\$889	\$889	\$889	\$889	\$889	\$889	\$6,222
OVERHEAD	\$0	\$0	\$0	\$0	\$169	\$482	\$2,109	\$2,103	\$2,071	\$6,934
Monthly Total	\$5,604	\$67,188	\$18,568	\$51,722	\$34,610	\$28,908	\$50,594	\$51,843	\$77,445	\$386,483
Running Total	\$5.604	\$72,792	\$91.360	\$143.082	\$177.692	\$206,600	\$257,195	\$309.038	\$386,483	

The spending reflects the ramp up of resources to the project. SSEC staff did not start charging the project until the WARF and NSF funds were formally in place by October 1 as seen by the jump in spending from September to October. The August spike was due to invoices from Paradigm Designs and Bit7 engineering services for their support of the July PDR.

The \$6,250 capital equipment purchase is the initial payment on the bare mux. The \$192,000 initial payment on the science and engineering grade detectors and electronics has not processed through the accounting system yet.

**Contingency.** At PDR, the project budget included an 11.5% contingency. The review panel recommended the project increase this to 15-20%. The project is currently applying a 15.2% contingency for the budget estimate to complete the instrument without the etalon, which equals \$710,728. Please note, the cost of the detector (\$520,000) and the camera and doublet optic blanks (formal bids received, \$155,495) are not included in the percent contingency calculations since there costs are known. With contingency, the total instrument cost is \$6,521,775. If the etalon is included, the total increases to \$6,793,695. These figures are summarized in Table **Table 5**.

**Table 5.** RSS-NIR Budget with contingency. Please note, the cost of the detector (\$520,000) and the camera and doublet optic blanks (formal bids received, \$155,495) are not included in the percent contingency calculations since there costs are known.

Spending to date (3/31/09)	\$446,216
Budget Estimate (04/09-03/12)	\$5,364,831
INSTRUMENT COST	\$5,811,047
Contingency 15.2%	\$710,728
TOTAL INSTRUMENT COST	\$6,521,775

Instrument cost w/contingency	\$6,521,775
Fabry-Perot w/ controller ROM	\$271,920
INSTRUMENT W/ ETALON	\$6,793,695

**Funding.** The RSS-NIR has received \$3.3M from the Wisconsin Alumni Research Foundation and just under \$2.0M from the National Science Foundation. The SALT consortium has provided \$145k and is committed to providing an additional \$155k. Another \$925k was formally requested at a SSWG in 2008. The total RSS-NIR funding is just over \$6.5M as shown in **Table 6**.

**Table 6.** RSS-NIR Funding Summary

WARF		\$3,300,000
NSF		\$1,996,775
SALT		
Initial Rec'd	\$145,000	
Committed	\$155,000	
Requested	\$925,000	
		\$1,225,000
	TOTAL FUNDING	\$6,521,775

The support provides enough funding to cover the instrument cost with a 15.2% contingency without the etalon.

#### **BUDGET CHANGES FROM CODR TO PDR**

The budget has grown since CoDR. The budget presented at CoDR was not developed from a grass roots level and there have been significant increases in scope. Primarily these scope increases have occurred from the original plan, which was to duplicate the design philosophy and detailed design of the systems and sub-systems produced by the RSS-VIS. After the decision was made to cool the RSS-NIR beam, it was determined that we were developing an entirely new instrument which would need many new systems and sub-systems designed and detailed from scratch. For example, the following design changes occurred between CoDR and PDR

- Spectral range increased from 0.9 1.4 to 0.9 1.7 microns, although the possibility to extend to 1.9 at low resolution for bright objects through warm-optics noise was considered.
- A fixed vs. articulating camera
- The CoDR scope did not include a Fabry-Perot etalon or its mechanism. The design would leave space for one. The PDR budget included the entire etalon and mechanism.
- No cooling.
- Commissioning was added at PDR.

The increases in scope are reflective of the budget increase.

CoDR	\$2,595,437
PDR	<u>\$6,196,773</u>
	$\Delta = \$3,601,336$

In part, the detailed, bottoms up budget development led to some of the cost increase, but much of the cost increase can be attributed to the scope increase as follows:

•	Added commissioning	\$475,000
•	Integration, Verification, and Testing	\$469,699
•	Predewar Enclosure & cooling	\$299,065
•	Detector & Dewar estimate increase	\$201,485
•	Fabry-Perot etalon	\$295,655
•	Contingency (CoDR had \$0)	\$631,900
•	Indirect (due to increased costs)	\$389,011

The rest of difference (~\$800k) is composed of labor. These were driven by the need to redesign the RSS-NIR as opposed to building duplicate systems to the RSS-VIS. Labor increases are summarized below.

- Engineering, design, and technical support increased from 7 man-months to 137.
- Machinist increased to 18 man-months. The CoDR budget assumed that only the department machinist would be used.
- Project management, quality assurance, safety, and systems engineering increased from 7 to 45 man-months.

#### **BUDGET CHANGES FROM PDR TO MTR**

The following table summarizes the budget differences from PDR to MTR and lists changes in scope or budget development to provide a like comparison.

 Table 7. PDR to MTR Budget Comparison

Scope change or reason for difference	PDR	MTR
1. Budget with contingency	\$6,196,773	\$6,521,775
2. Add in Fabry-Perot to MTR budget		\$271,920
3. Increases in scope from PDR - MTR		
Tip/tilt of fold mirror		-\$54,947
Environment control of RSS optics		-\$80,373
4. Add pre-July 1 spending to PDR budget (this was	\$59,733	
not included in the PDR budget presentation).		
5. Increased contingency to over 15% on MTR		-\$78,828
6. Increased the number (7 to 12) and updated the cost		-\$204,000
estimate for the Fabry-Perot order blocking filters		
7. Increased Project Administration budget		-\$176,097
<ul> <li>Increased science team member support by 6</li> </ul>		
months.		
Added a semester of instructor buyout		
• Increased PM from 1/3 to ½ time		
• Increased SE from 1/5 to 2/5 time		
Added software licensing fees and review costs		
8. Increased labor support of IV&T		-\$80,817
9. Decreased cost of dewar development		\$89,595
<ul> <li>Dewar development is now being done in-house</li> </ul>		
with the support of Stephen Smee. The cost		
savings is reflected against the GL Scientific ROM		
used in the PDR budget.		
Adjusted Budgets	\$6,256,506	\$6,208,228

With the adjustments, the budgets are within three-quarters of a percent.

#### **BUDGET DETAIL**

The following pages provide detail on the remaining \$6.1M budget. An overall summary is provided along with detailed material and capital equipment lists, travel, and subsystem budgets.

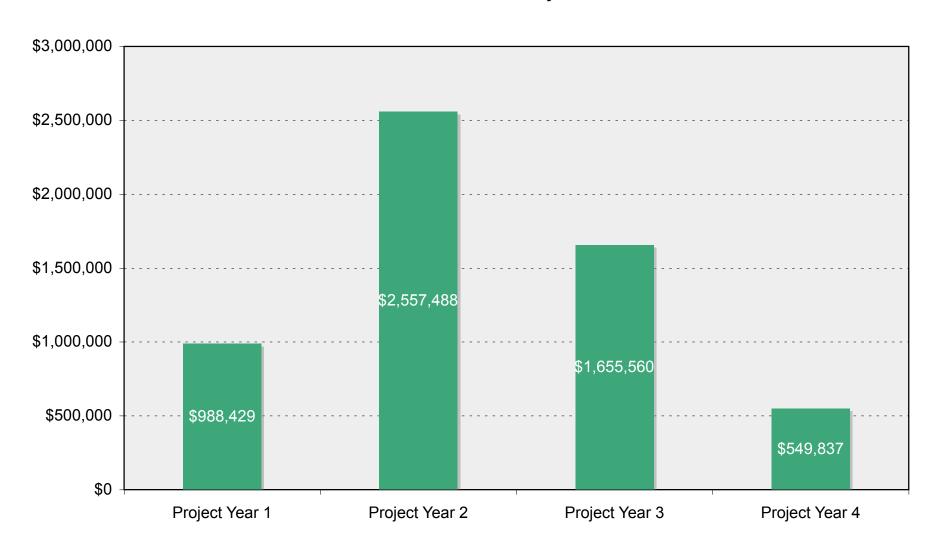
BUDGET SUMMARY	PY01	PY02	PY03	PY04	O/H RATE:	45.0%
	2008-2009	2009-2010	2010-2011	2011 - 2012	TOTAL	Ave FTE
LABOR	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR	IOIAL	Project Life
Principal Investigator, Andrew Sheinis	150	300	300	150	900	0.19
Project Scientist, Marsha Wolf	450	1,800	1,800	750	4,800	1.00
Co-Investigator, Matt Bershady	150	150	150	0	450	0.09
Co-Investigator, Amy Barger	0	0	150	0	150	0.03
Sr. Scientist Advisor, Ken Nordsieck	75	75	75	0	225	0.05
Project Manager, Mark Mulligan	255	1,020	1,020	250	2,545	0.53
Quality Assurance & Safety Manager, Tom Demk	75	300	300	25	700	0.15
Systems Engineer, Don Thielman	225	900	900	450	2,475	0.52
Electrical Engineer, Paul Sendelbach	60	440	200	0	700	0.15
Lead Mechanical Engineer, Mike Smith	450	1,800	1,800	450	4,500	0.94
Electronics Technician	0	725	1,280	0	2,005	0.42
Opto-mechanical Engineer, Jeff Wong*	225	900	655	0	1,780	0.37
Software Programmer, Jeff Percival	225	900	1,145	375	2,645	0.55
Postdoc, Ryan Doering	450	1,800	1,800	225	4,275	0.89
Mechanical Engineer, Bill Mason	435	1,740	1,250	450	3,875	0.81
Designers*	105	2,245	225	0	2,575	0.54
Machinist	0	2,175	1,325	0	3,500	0.73
Instructor	0	600	600	600	1,800	0.38
Co-Investigator, Ted Williams	75	75	75	0	225	0.05
Controls Engineer, Ron Koch*	225	900	725	0	1,850	0.39
Graduate Students	225	1,650	1,800	750	4,425	0.92
Undergraduate Students	360	2,090	1,330	250	4,030	0.84
*Labor costs for these resources are presened in Subc		_,	1,200		1,000	
TOTAL HOURS:	4,215	22,585	18,905	4,725	50,430	10.51
TOTAL FTEs:	9.37	50.19	42.01	10.50	10.51	
SALARY	\$164,574	\$719,547	\$686,818	\$204,082	\$1,775,021	
FRINGE	\$57,464	\$252,198	\$247,698	\$74,811	\$632,171	
TOTAL LABOR	\$222,038	\$971,745	\$934,516	\$278,893	\$2,407,192	
	<b>V</b> ,000	<b>401 1,1 10</b>	<b>400</b> 1,0 10	<b>\$2.0,000</b>	<b>\$2, 101, 102</b>	
MATERIAL	\$40,740	\$187,020	\$58,100	\$19,000	\$304,860	
MAIENAE	ψ+0,7+0	Ψ107,020	ψ30,100	Ψ10,000	Ψ004,000	
CAPITAL EQUIPMENT	\$244,974	\$884,330	\$296,550	\$10,000	\$1,435,854	
OA TIAL EQUI MENT	Ψ211,071	ψοσ 1,000	Ψ200,000	Ψ10,000	ψ1,100,001	
TRAVEL	\$18,621	\$21,729	\$4,439	\$95,303	\$140,092	
TIVALE	ψ10,021	Ψ21,720	ψ1,100	ψου,ουσ	Ψ110,002	
SUBCONTRACTS / SERVICES	\$57,043	\$395,408	\$157,693	\$8,900	\$619,043	
SOBSONTIAS TO 7 SERVISES	ψ57,045	ψ000,400	Ψ107,000	ψ0,500	ψ010,040	
TOTAL DIRECT	\$591,956	\$2,491,248	\$1,456,638	\$412,096	\$4,951,938	
TOTAL INDIRECT	\$9,990	\$66,240	\$198,922	\$137,741	\$412,893	
TOTAL	\$601,946	\$2,557,488	\$1,655,560	\$549,837	\$5,364,831	
			I=			
		**CO	NTINGENCY:	15.2%	\$710,728	
			I.			

TOTAL INSTRUMENT COST WITH CONTINGENCY:

\$6,075,559

<sup>\*\*</sup>DOES NOT INCLUDE THE DETECTOR (ORDER PLACED) NOR CAMERA AND DOUBLET BLANKS (BIDS RECEIVED) IN THE PERCENT CONTINGENCY

# RSS NIR Budget Profile Mid-Term Review May 2009



MATERIAL SUMMARY LIST

1.0 PROJECT ADMINISTRATION			2.4 Fold Mirror		
Publications (SPIE,)	\$	4,000	Lens holder	\$	750
Conference Fees (4 attendees @ \$1250/ea)	\$	10,000	Material	\$	250
Computer (desktop or laptop)	\$	9,000	Miscellaneous	\$	1,000
Solidworks Lic (AIS), PDM (TAD)	\$	3,350		\$	-
Solidworks PDM Enterprise Training	\$	8,000		\$	-
Miscellaneous	\$	6,400		\$	-
MTR	\$	7,500		\$	-
CDR	\$	7,500		<u>\$</u> \$	-
	\$	55,750		\$	2,000
2.0 OPTICAL ELEMENTS					
2.1 Optical Design			2.5 Fold Mirror Mechanism		
SolidWorks Maintenance (MJW)	\$	750	Linear Encoder (1)	\$	1,000
Computer (PS)	\$	3,000	Limit Sensors (11)	\$	500
Software (PS)	\$	1,000	Material	\$	150
Computer (Grad)	\$	6,000	Misc	\$	300
Software (Grad)	\$	2,000		<u>\$</u>	-
	\$	12,750		\$	1,950
2.2 Dichrioc			3.0 GRATING ASSEMBLY		
Lens holder	\$	750	Material	\$	500
Material	\$	250	Holder	\$	500
Miscellaneous	\$	500	Bearings	\$	500
SolidWorks Annual Fee (WPM)	\$	1,000	Drive Screw	\$	500
SolidWorks PDM (WPM)	\$	2,800	Drive Gear, coupling, or other device	\$	300
	\$	-	Hall Sensors (6)	\$	120
	<u>\$</u> \$	-	Miscellaneous	\$	500
	\$	5,300		\$	2,920
2.3 Doublet			4.0 FILTER & OPTICS STORAGE ASSEMBLY		
Lens holder	\$	750	Material	\$	750
Material	\$	250	Storage optics drive screw	\$	250
Miscellaneous	\$	1,000	Storage optics bearing blocks	\$	750
	\$	-	Filter insertion drive screw	\$	250
	\$	-	Filter insertion bearings	\$	250
	\$	-	Miscellaneous hardware	\$	1,500
	\$	-	SolidWorks PDM (JPW)	\$	2,800
	\$	-	Hall Sensor (60)	\$	900
	\$	2,000		\$	7,450

MATERIAL SUMMARY LIST

5.0 FABRY-PEROT ETALON			11.0 CONTROL SYSTEM		
Material	\$	750	Enclosure material	\$	500
Bearings & precision guides	\$	1,000	Additional sensors	\$	1,200
Drive shaft	\$	500	Cabling	\$	6,000
Miscellaneous	\$	1,000	Labview Software Licensing	\$	2,400
Hall Sensors (6)	\$	90	PC Boards	\$	7,500
Pneumatic Lock (3)	\$	900	Miscellaneous	\$	14,000
	\$	-	Computer Hardware	\$	6,000
	\$	4,240	5 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	\$	37,600
6.0 POLARIZING BEAM SPLITTER	*	.,	12.0 POWER DISTRIBUTION	*	0.,000
Material	\$	750	Power Supplies	\$	7,500
Frame	\$	500	PC Boards	\$	7,500
Insertion mechanism, pneumatic (2)	\$	1,000	Cabling	\$	5,000
Hall Sensors (3)	\$	45	Material	\$	500
Miscellaneous	\$	1,250	Heat sinks	\$	500
Guide rails and bearings	\$	1,200	Miscellaneous Hardware	\$	8,000
-	\$	4,745		\$	29,000
7.0 CAMERA SUBASSEMBLY			13.0 SUPPORT AND TEST EQUIPMENT		
Material & Misc H/W	\$	3,000	Material	\$	5,000
Gearbox, drive gear, precision bearings/rollers	\$	4,000	Testing Computer support hardware	\$	5,000
Pneumatic Lock, Articulation	\$	500	Software and licensing	\$	3,000
Camera Focus Linear Encoder (2)	\$	1,500		\$	-
Limit Switches (5)	\$	375		\$	-
Hall Sensors (6)	\$	90		\$	-
Articulation Actuator (2) [Dynatos Cya DI 2220]	\$	2,200		\$	_
Articulation Actuator (2) [Dynatec Sys BL2330]	Ψ	_,0			
Articulation Position Encoder, Absolute (2)	\$	2,500		\$	-
	\$ \$	2,500 3,800		\$ _\$	<u>-</u>
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)	\$ \$ \$	2,500		\$ \$ \$	13,000
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY	•	2,500 3,800 17,965	14.0 INTEGRATION, VERIFICATION, AND	\$ <u>\$</u> \$ TESTI	NG
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation	\$	2,500 3,800 17,965 3,000	Miscellaneous Expenses	\$ \$ \$ TESTII	<b>NG</b> 10,000
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing	\$ \$	2,500 3,800 17,965 3,000 2,000	Miscellaneous Expenses Labview Software License	\$ \$ \$ TESTII \$	<b>NG</b> 10,000 1,200
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material	\$ \$ \$	2,500 3,800 17,965 3,000 2,000 1,000	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals	\$ \$ TESTII \$ \$	10,000 1,200 4,500
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron]	\$ \$ \$ \$	2,500 3,800 17,965 3,000 2,000 1,000 1,500	Miscellaneous Expenses Labview Software License	\$ \$ TESTII \$ \$ \$	<b>NG</b> 10,000 1,200
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute	\$ \$ \$ \$	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,250	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals	\$ \$ TESTII \$ \$ \$	10,000 1,200 4,500
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings	\$ \$ \$ \$ \$ \$	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,250 11,500	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals	\$ \$ \$ TESTII \$ \$ \$ \$ \$	10,000 1,200 4,500
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc	* * * * * * * *	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,250 11,500 3,810	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals	\$ \$ \$ TESTII \$ \$ \$ \$ \$ \$ \$	10,000 1,200 4,500
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc Temperature sensors & controller	* * * * * * * *	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,250 11,500 3,810 8,000	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals	\$ \$ \$ TESTII \$ \$ \$ \$ \$ \$ \$	10,000 1,200 4,500
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc	* * * * * * * *	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,250 11,500 3,810 8,000 4,500	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals	\$ \$ \$ TESTII \$ \$ \$ \$ \$ \$ \$	10,000 1,200 4,500 2,000
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc Temperature sensors & controller Cabling	* * * * * * * *	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,250 11,500 3,810 8,000	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals	\$ \$ \$ TESTII \$ \$ \$ \$ \$ \$ \$	10,000 1,200 4,500
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc Temperature sensors & controller Cabling  9.0 PREDEWAR SUBASSEMBLY	* * * * * * * * * * * * * * * * * * * *	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,250 11,500 3,810 8,000 4,500 36,560	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	10,000 1,200 4,500 2,000 - - - - 17,700
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc Temperature sensors & controller Cabling  9.0 PREDEWAR SUBASSEMBLY Materials - thermal insulating	* *********	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,250 11,500 3,810 8,000 4,500 36,560	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  15.0 COMMISSIONING Miscellaneous equipment / expenses	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	10,000 1,200 4,500 2,000 - - - - 17,700
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc Temperature sensors & controller Cabling  9.0 PREDEWAR SUBASSEMBLY Materials - thermal insulating Materials - structural		2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,250 11,500 3,810 8,000 4,500 36,560	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  15.0 COMMISSIONING Miscellaneous equipment / expenses Shipping container and packing materials	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	10,000 1,200 4,500 2,000 - - - - 17,700 10,500 2,500
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc Temperature sensors & controller Cabling  9.0 PREDEWAR SUBASSEMBLY Materials - thermal insulating Materials - structural Enclosure thermal control (heaters, controller, wiring)		2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,250 11,500 3,810 8,000 4,500 36,560 3,000 1,000 3,000	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  15.0 COMMISSIONING Miscellaneous equipment / expenses Shipping container and packing materials SolidWorks Licenses - Renewals	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	10,000 1,200 4,500 2,000 - - - - 17,700
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc Temperature sensors & controller Cabling  9.0 PREDEWAR SUBASSEMBLY Materials - thermal insulating Materials - structural Enclosure thermal control (heaters, controller, wiring) Baffling coatings - paint	* * * * * * * * * * * * * * * * * * *	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,250 11,500 3,810 8,000 4,500 36,560 3,000 1,000 3,000 1,000	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  15.0 COMMISSIONING Miscellaneous equipment / expenses Shipping container and packing materials SolidWorks Licenses - Renewals PDM Licenses - Renewals	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	10,000 1,200 4,500 2,000 - - - 17,700 10,500 2,500 4,500
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc Temperature sensors & controller Cabling  9.0 PREDEWAR SUBASSEMBLY Materials - thermal insulating Materials - structural Enclosure thermal control (heaters, controller, wiring) Baffling coatings - paint Pneumatics (3) & Misc. H/W		2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,500 1,500 3,810 8,000 4,500 36,560 3,000 1,000 3,000 1,000 6,500	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  15.0 COMMISSIONING Miscellaneous equipment / expenses Shipping container and packing materials SolidWorks Licenses - Renewals	\$ \$   \$   \$   \$   \$   \$   \$   \$   \$   \$	10,000 1,200 4,500 2,000 - - - - 17,700 10,500 2,500
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc Temperature sensors & controller Cabling  9.0 PREDEWAR SUBASSEMBLY Materials - thermal insulating Materials - structural Enclosure thermal control (heaters, controller, wiring) Baffling coatings - paint Pneumatics (3) & Misc. H/W Thermocouples & Hall Sensors (6)	* * * * * * * * * * * * * * * * * * *	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,500 1,500 3,810 8,000 4,500 36,560 3,000 1,000 6,500 1,090	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  15.0 COMMISSIONING Miscellaneous equipment / expenses Shipping container and packing materials SolidWorks Licenses - Renewals PDM Licenses - Renewals	\$ \$   \$   \$   \$   \$   \$   \$   \$   \$   \$	10,000 1,200 4,500 2,000 - - - 17,700 10,500 2,500 4,500
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc Temperature sensors & controller Cabling  9.0 PREDEWAR SUBASSEMBLY Materials - thermal insulating Materials - structural Enclosure thermal control (heaters, controller, wiring) Baffling coatings - paint Pneumatics (3) & Misc. H/W Thermocouples & Hall Sensors (6) SolidWorks Licenses - Renewals (DPA/ARR)	* * * * * * * * * * * * * * * * * * *	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,500 3,810 8,000 4,500 36,560 3,000 1,000 3,000 1,000 6,500 1,090 1,290	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  15.0 COMMISSIONING Miscellaneous equipment / expenses Shipping container and packing materials SolidWorks Licenses - Renewals PDM Licenses - Renewals	\$ \$   \$   \$   \$   \$   \$   \$   \$   \$   \$	10,000 1,200 4,500 2,000 - - - 17,700 10,500 2,500 4,500
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc Temperature sensors & controller Cabling  9.0 PREDEWAR SUBASSEMBLY Materials - thermal insulating Materials - structural Enclosure thermal control (heaters, controller, wiring) Baffling coatings - paint Pneumatics (3) & Misc. H/W Thermocouples & Hall Sensors (6) SolidWorks Licenses - Renewals (DPA/ARR) PDM Licenses - Renewals (ARR)	* * * * * * * * * * * * * * * * * * *	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,500 1,500 3,810 8,000 4,500 36,560 3,000 1,000 6,500 1,090 1,290 2,800	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  15.0 COMMISSIONING Miscellaneous equipment / expenses Shipping container and packing materials SolidWorks Licenses - Renewals PDM Licenses - Renewals	\$ \$   \$   \$   \$   \$   \$   \$   \$   \$   \$	10,000 1,200 4,500 2,000 - - - 17,700 10,500 2,500 4,500
Articulation Position Encoder, Absolute (2) Solidworks & S/W PDM (WPS)  8.0 DETECTOR / DEWAR ASSEMBLY CPU Workstation Software and IDL licensing Material Filter wheel actuator [Phytron] Filter wheel encoder, absolute Cryrocooler Compessor & Fittings Hall Sensors & Misc Temperature sensors & controller Cabling  9.0 PREDEWAR SUBASSEMBLY Materials - thermal insulating Materials - structural Enclosure thermal control (heaters, controller, wiring) Baffling coatings - paint Pneumatics (3) & Misc. H/W Thermocouples & Hall Sensors (6) SolidWorks Licenses - Renewals (DPA/ARR)	* * * * * * * * * * * * * * * * * * *	2,500 3,800 17,965 3,000 2,000 1,000 1,500 1,500 3,810 8,000 4,500 36,560 3,000 1,000 3,000 1,000 6,500 1,090 1,290	Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  15.0 COMMISSIONING Miscellaneous equipment / expenses Shipping container and packing materials SolidWorks Licenses - Renewals PDM Licenses - Renewals	\$ \$   \$   \$   \$   \$   \$   \$   \$   \$   \$	10,000 1,200 4,500 2,000 - - - 17,700 10,500 2,500 4,500

CAPITAL EQUIPMENT SUIMMARY LIST

CAPITAL EQUIPMENT SUMMARY LIST					
1.0 PROJECT ADMINISTRATION	_		6.0 POLARIZING BEAM SPLITTER	•	
	\$	-	Polarizing beam splitter	\$	55,000
	\$		Coating	\$	5,000
2.0 ORTICAL ELEMENTS	Ф	-		Þ	60,000
2.0 OPTICAL ELEMENTS 2.1 Optical Design			7.0 CAMERA SUBASSEMBLY		
2.1 Optical Design	\$		Optical blanks & Witness Samples(7)	\$	127,567
	\$	_	Lens fabrication	\$	77,000
	φ \$	-	Lens coating	\$	28,000
	\$	_	Camera Focus Actuator (1) [Physic M-235]	\$	3,373
	\$	<del></del>	Camera i ocus Actuator (1) [i riysic ivi-255]	\$	235,940
2.2 Dichrioc	Ψ		8.0 DETECTOR / DEWAR ASSEMBLY	Ψ	200,040
Mirror blank	\$	10,000	SG H2RG FPA	\$	350,000
Mirror figuring	\$	10,000	EG H2RG FPA	\$	50,000
Mirror coating	\$	15,000	Sidecar - Bare Mux, Cryo & Room Temp	\$	67,000
wiiror coating	\$	-	Bare Mux	\$	25,000
	\$	_	Filters	\$	20,000
	\$	35,000	1 11010	\$	512,000
2.3 Doublet	Ψ	00,000	9.0 PREDEWAR SUBASSEMBLY	Ψ	012,000
Optic Blank	\$	27,928	Baffling coating - plating	\$	5,000
Lens grinding, surfacing, and figuring	\$	22,000	Chiller - FTS ULT Series RC210	\$	32,000
Coating	\$	8,000	Chiller plumbing	\$	7,500
Codding	\$	57,928	Crimior plantising	\$	44,500
2.4 Fold Mirror	*	0.,020	11.0 CONTROL SYSTEM	*	,
Purchase Lens	\$	7,500	Motor Controller & Motion Control Boards	\$	19,500
	\$	-	DAQ and I/O hardware	\$	7,500
	\$	7,500		\$	27,000
2.5 Fold Mirror Mechanism	·	•	12.0 POWER DISTRIBUTION		,
Tip/Tilt Stage+Piston Piezo [Physik P-541.Z & P-290.0	\$	11,743		\$	_
Controller, Power Supply [Physik E-500.0]	\$	2,490		\$	-
Servo Modules [Physik E-509.S3 & E-509.C1A]	\$	6,865		\$	-
Amplifie Modules [Physik E-503.0 & E-508.0]	\$	4,772		\$	-
I/F Modules [Physik E516.i1 & E-516.i3]	\$	7,135		\$	-
	\$	33,005		\$	-
3.0 GRATING ASSEMBLY			13.0 SUPPORT AND TEST EQUIPMENT		
Grating Insertion Actuator (1) [Ultramotion HT17]	\$	750	Test setup optics & lamps	\$	10,000
Grating Absolute Encoder (1)	\$	1,075	Throughput test equipment	\$	10,000
Grating Rotation Stage Actuator (2) [Physik M-037.DC	\$	8,356	Other test equipment	\$	30,000
Grating Absolute Rotary Encoder (2)	\$	2,150		\$	-
Gratings	\$	80,000		\$	-
	\$	92,331		\$	50,000
4.0 FILTER & OPTICS STORAGE ASSEMBLY			14.0 INTEGRATION, VERIFICATION, AND	TESTING	;
F-P Order Blocking Filters	\$	234,000		\$	-
OSA Drive Actuator (2) [Ultramotion HT23]	\$	1,900		\$	-
OSA Absolute Position Encoder (2)	\$	2,150		\$	-
Filter Insertion & Lock Actuators (2) [Ultramotion HT17]	\$	1,500		\$	-
Filter Absolute Position Encoder (1)	\$	1,075		\$	-
	\$	240,625		\$	-
5.0 FABRY-PEROT ETALON			15.0 COMMISSIONING		
F-P Insertion Actuator (1) [Ultramotion HT23]	\$	950	Instrument Shipping	\$	10,000
F-P Absolute Encoder (1)	\$	1,075		\$	
	\$	2,025		\$	10,000

RSS	NEAR INFRARED SPECTROGRAP	GH FOR SAL	T TRAVEL I	DATA										1	TRIP	S PE	R PE	RIO	)															
		MISC EXPE	NSES (PARKIN	IG, TAXI, LA	UNDRY):	3%	PY 08.			PRO	OJEC.	ΓYEA	AR 2:	2009-2	010			PRO	JEC.	T YE	AR 3	3: 20	10-20	011			PRC	JEC.	T YE	AR 4	: 201	0-20	12	П
Task	Purpose of Trip	Origin	Destination	Travellers	Duration	Cars	AN	N J	J	A S	0	N D	J	FM	ΑI	M J	J.	A S	0	N C	J	F	M	A M	J	JΑ	S	0	N D	J	F	M A	M	
	Conference	Madison	San Francisco	4	4	1								1								1												
	MTR - Reviewers	Madison	Wash DC	4	3	0		1			П		П						П							Т				$\Box$			П	П
1.0	CDR - Reviers	Madison	Wash DC	4	3	0								1																				
	Support RSS-VIS Reassembly & See Facilities	Madison	Cape Town	1	14	1		1			П		П						П							Т				$\Box$			П	П
	Support RSS-VIS Reassembly & See Facilities	Madison	Cape Town	1	8	1		2		2																								
2.1	Meet w/ Harland	Madison	Los Angeles	1	7	1		1	ļļ.				<del>  -</del>						<del>  </del> -		-			-			-			4-4		-	. <del>]</del>	
2.2											+		$\Box$		+						+	Н				+		H		$\forall$			+	
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	Travel to vendor	Madison	Atlanta	1	5	1				1																$^{\dagger}$				$\pm$			$\pm$	
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	Observe Fabry-Perot testing	Madison	Boston	1	6	0	1	1																		+	H	Н		+			₩	
	Support RSS-VIS F-P Testing	Madison	Cape Town	1	8	1			1						$\top$				П			Н				+				+			+	
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	Steve Smee to Madison	Madison	Boston	1	3	0		1			1																			$\Box$			T	
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	Commissioning (Internate)	Marker	Cons Tour	4	40	4									Ţ					T		П	T			Ŧ	F	4	T	Д	П	1	Д	F
	Commissioning (Integrate)  Commissioning (Integrate & Test)	Madison Madison	Cape Town Cape Town	2	40 40	1	$\vdash$		+		++				+		$\vdash$			-	+	H		-				1	1	+			+	$\vdash$
	Commissioning (Integrate & Test, Comm, & Train)	Madison	Cape Town	2	40	1									_						+							-	1 1	+		+	+	$\vdash$
	Commodorning (magrate, 16st, Comm, & Ham)	Wadison	Oupe IOWII		70						+						$\vdash$											H		+			$\forall$	
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IN 2009 DOLLARS Data Collected: 4/15/08

Origin	Destination								
Origin	Atlanta	Boston	Cape Town	Denver	Los Angeles	Madison	San Francisco	Seattle	Wash DC
Atlanta									
Boston									
Cape Town									
Denver									
Los Angeles									
Madison	\$307	\$196	\$2,288	\$319	\$271		\$210	\$240	\$183
San Francisco									
Seattle									
Wash DC									
Airport Code:	ATL	BOS	CPT	DEN	LAX	MSN	SFO	SEA	DCA
Hotel / Day	\$141	\$212	\$100	\$149	\$128	\$69	\$168	\$158	\$202
Automobile / Day	\$37.50	\$47.50	\$24.00	\$40.50	\$37.50	\$37.50	\$37.50	\$37.50	\$43.50
Meal Allowance	\$40	\$40	\$40	\$40	\$40	\$34	\$40	\$40	\$40

#### NOTES:

- [1] Weighted average of seasonal rates.
- [3] Subcompact daily rate
- [4] City Surchage Rate Applied to \$36 base rate
- [5] Flight costs are the average of 3-8 airline prices (high and low removed) assuming at least a two week advance purchase of a Monday to Friday trip except Cape Town. That destination assumes a two week stay and the lower two estimates of three were used for the average.
- [6] Cape Town car rental based on one week at the \$168 (averege of 5 with high and low removed) or \$24/day.

NIR BUDGET SUMMARY BY WBS Tasks	PY01 2008-2009 APR - JUN	PY02 2009-2010 JUL - JUN	PY03 2010-2011 JUL - JUN	PY04 2011 JUL - DEC	TOTAL
1.0 PROJECT ADMINISTRATION	\$100,591	\$322,059	\$311,957	\$87,104	\$821,711
2.0 OPTICAL ELEMENTS	\$68,463	\$389,878	\$105,450	\$0	\$563,791
3.0 GRATING ASSEMBLY	\$3,375	\$120,225	\$12,959	\$0	\$136,559
4.0 FILTER & OPTICS STORAGE ASSEMBLY	\$6,800	\$113,396	\$178,757	\$0	\$298,953
5.0 FABRY-PEROT ETALON	\$15,801	\$50,553	\$16,032	\$0	\$82,386
6.0 POLARIZING BEAM SPLITTER	\$24,360	\$57,072	\$54,202	\$0	\$135,635
7.0 CAMERA SUBASSEMBLY	\$54,962	\$320,885	\$34,282	\$0	\$410,129
8.0 DETECTOR / DEWAR ASSEMBLY	\$236,428	\$576,046	\$76,385	\$0	\$888,859
9.0 PREDEWAR SUBASSEMBLY	\$30,709	\$166,341	\$50,569	\$0	\$247,618
10.0 RSS COMMON OPTICS ENVIRONMENTAL CONTROL	\$11,029	\$29,248	\$40,096	\$0	\$80,373
11.0 CONTROL SYSTEM	\$41,598	\$238,922	\$83,922	\$0	\$364,442
12.0 POWER DISTRIBUTION	\$7,830	\$102,005	\$44,837	\$0	\$154,672
13.0 SUPPORT AND TEST EQUIPMENT	\$0	\$70,859	\$95,595	\$0	\$166,454
14.0 INTEGRATION, VERIFICATION, AND TESTING	\$0	\$0	\$550,516	\$0	\$550,516
15.0 COMMISSIONING	\$0	\$0	\$0	\$462,733	\$462,733
TOTAL	\$601,946	\$2,557,488	\$1,655,560	\$549,837	\$5,364,831

	PY01	PY02	PY03	PY04	O/H RATE:	45.0
BOR	2008-2009	2009-2010	2010-2011 JUL - JUN	2011 - 2012	TOTAL	Ave FTE
-	<b>APR - JUN</b> 150	JUL - JUN 300	JUL - JUN 300	JUL - MAR 150	900	Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	900	0.
Project Scientist, Marsha Wolf Co-Investigator, Matt Bershady	150	150	150	0	450	0.0
<b>o</b> , ,	0	0	150	0	150	
Co-Investigator, Amy Barger Sr. Scientist Advisor, Ken Nordsieck	0	0	75	0	75	0.0
	255	1,020	1,020	250	2,545	0.
Project Manager, Mark Mulligan						
Quality Assurance & Safety Manager, Tom Demke	75	300	300	25	700	0.
Systems Engineer, Don Thielman	225	900	900	0	2,025	0.
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.
Lead Mechanical Engineer, Mike Smith	0	0	0	0	0	0.
Electronics Technician	0	0	0	0	0	0
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	0
Software Programmer, Jeff Percival	0	0	0	0	0	0
Postdoc, Ryan Doering	0	0	0	0	0	0.
Mechanical Engineer, Bill Mason	0	0	0	0	0	0
Designers*	0	0	0	0	0	0.
Machinist	0	0	0	0	0	0
Instructor	0	600	600	600	1,800	0
Co-Investigator, Ted Williams	0	0	0	0	0	0
Controls Engineer, Ron Koch*	0	0	0	0	0	0
Graduate Students	0	0	0	0	0	0
Undergraduate Students	90	600	600	250	1,540	0
*Labor costs for these resources are presented in Subco		2.070	4.005	4.075	40.405	
TOTAL FEE	945 2.10	3,870 2.15	4,095 2.28	1,275	10,185	2
TOTAL FTEs:	2.10	2.15	2.20	1.70	2.12	
SALARY	\$53,367	\$200,749	\$215,212	\$62,777	\$532,105	
FRINGE	\$20,241	\$75,260	\$79,106	\$23,327	\$197,934	
TOTAL LABOR	\$73,608	\$276,009	\$294,318	\$86,104	\$730,039	
TERIAL	ψ10,000	Ψ27 0,000	Ψ204,010	φου, το τη	ψ1 00,000	
Publications (SPIE,)	\$0	\$2,000	\$2,000	\$0	\$4,000	
Conference Fees (4 attendees @ \$1250/ea)	\$0	\$5,000	\$5,000	\$0	\$10,000	
Computer (desktop or laptop)	\$3,000	\$3,000	\$3,000	\$0	\$9,000	
Solidworks Lic (AIS), PDM (TAD)	\$0	\$2,550	\$800	\$0	\$3,350	
Solidworks PDM Enterprise Training	\$0	\$8,000	\$0	\$0	\$8,000	
Miscellaneous	\$600	\$2,400	\$2,400	\$1,000	\$6,400	
MTR	\$7,500	\$0	\$0	\$0		
0DD			φυ	ΨΟ	\$7,500	
CDR	\$0	\$7,500	\$0	\$0	\$7,500 \$7,500	
CDR	\$0 \$0	\$7,500 \$0				
TOTAL	· ·		\$0	\$0	\$7,500	
	\$0	\$0	\$0 \$0	\$0 \$0	\$7,500 \$0	
TOTAL	\$0	\$0	\$0 \$0	\$0 \$0	\$7,500 \$0	
TOTAL	\$0 \$11,100	\$0 \$30,450	\$0 \$0 \$13,200	\$0 \$0 \$1,000	\$7,500 \$0 \$55,750	
TOTAL	\$0 \$11,100 \$0	\$0 \$30,450 \$0	\$0 \$0 \$13,200	\$0 \$0 \$1,000	\$7,500 \$0 \$55,750	
TOTAL	\$0 \$11,100 \$0 \$0	\$0 \$30,450 \$0 \$0	\$0 \$0 \$13,200 \$0 \$0	\$0 \$0 \$1,000 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0	
TOTAL	\$0 \$11,100 \$0 \$0 \$0	\$0 \$30,450 \$0 \$0 \$0	\$0 \$0 \$13,200 \$0 \$0 \$0 \$0	\$0 \$1,000 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0	
TOTAL	\$0 \$11,100 \$0 \$0 \$0 \$0	\$0 \$30,450 \$0 \$0 \$0 \$0	\$0 \$0 \$13,200 \$0 \$0 \$0 \$0 \$0	\$0 \$1,000 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0	
TOTAL PITAL EQUIPMENT	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0	
TOTAL PITAL EQUIPMENT  TOTAL	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0	
TOTAL PITAL EQUIPMENT  TOTAL	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL PITAL EQUIPMENT  TOTAL AVEL Conference	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL PITAL EQUIPMENT  TOTAL  AVEL Conference MTR - Reviewers	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$3 \$0 \$3 \$3,745	
TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  Conference  MTR - Reviewers  CDR - Reviers	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$3 \$0 \$3 \$0 \$3 \$4 \$5 \$5 \$7 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL PITAL EQUIPMENT  TOTAL  AVEL  Conference MTR - Reviewers CDR - Reviers Support RSS-VIS Reassembly & See Facilities	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$13,200 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$1 \$0 \$2 \$1 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$2 \$2	
TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  Conference  MTR - Reviewers  CDR - Reviers  Support RSS-VIS Reassembly & See Facilities  Support RSS-VIS Reassembly & See Facilities	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$13,200 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$1 \$0 \$2 \$1 \$4,745 \$4,722 \$14,832	
TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  Conference  MTR - Reviewers  CDR - Reviers  Support RSS-VIS Reassembly & See Facilities  Support RSS-VIS Reassembly & See Facilities  TOTAL	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$13,200 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$1 \$0 \$2 \$1 \$4,745 \$4,722 \$14,832	
TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  Conference  MTR - Reviewers  CDR - Reviers  Support RSS-VIS Reassembly & See Facilities  Support RSS-VIS Reassembly & See Facilities  TOTAL	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$3,745 \$0 \$4,722 \$7,416 \$15,883	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$13,200 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$1 \$1 \$1,745	
TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  Conference  MTR - Reviewers  CDR - Reviers  Support RSS-VIS Reassembly & See Facilities  Support RSS-VIS Reassembly & See Facilities  TOTAL	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$3,745 \$0 \$4,722 \$7,416 \$15,883	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$14,439 \$0 \$3,745 \$0 \$15,600	\$0 \$0 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$1 \$3,745 \$3,745 \$4,722 \$14,832 \$35,922	
TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  Conference  MTR - Reviewers  CDR - Reviers  Support RSS-VIS Reassembly & See Facilities  Support RSS-VIS Reassembly & See Facilities  TOTAL  BCONTRACTS / SERVICES	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$3,745 \$0 \$4,722 \$7,416 \$15,883	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$15,600 \$0 \$0 \$0 \$15,600	\$0 \$0 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$3,745 \$3,745 \$4,722 \$14,832 \$35,922	
TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  Conference  MTR - Reviewers  CDR - Reviers  Support RSS-VIS Reassembly & See Facilities  Support RSS-VIS Reassembly & See Facilities  TOTAL  BCONTRACTS / SERVICES	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$3,745 \$0 \$4,722 \$7,416 \$15,883	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  Conference  MTR - Reviewers  CDR - Reviers  Support RSS-VIS Reassembly & See Facilities  Support RSS-VIS Reassembly & See Facilities  TOTAL  BCONTRACTS / SERVICES  Paradigm Design  Bit7	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$3,745 \$0 \$4,722 \$7,416 \$15,883	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$15,600 \$15,600 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$13,200 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$3,745 \$3,745 \$4,722 \$14,832 \$35,922	
TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  Conference  MTR - Reviewers  CDR - Reviers  Support RSS-VIS Reassembly & See Facilities  Support RSS-VIS Reassembly & See Facilities  TOTAL  BCONTRACTS / SERVICES  Paradigm Design  Bit7	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$3,745 \$0 \$4,722 \$7,416 \$15,883	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$15,600 \$15,600 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$13,200 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$3,745 \$3,745 \$4,722 \$14,832 \$35,922	
TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  Conference  MTR - Reviewers  CDR - Reviers  Support RSS-VIS Reassembly & See Facilities  Support RSS-VIS Reassembly & See Facilities  TOTAL  BCONTRACTS / SERVICES  Paradigm Design  Bit7  TOTAL	\$0 \$11,100 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$3,745 \$0 \$4,722 \$7,416 \$15,883 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$30,450 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$15,600 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$13,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$1,000 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$0 \$55,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	

2.0 OPTICAL ELEMENTS	PY01	PY02	PY03	PY04	O/H RATE:	45.0%
	2008-2009	2009-2010	2010-2011	2011-2012	TOTAL	Ave FTE
LABOR	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR	IOIAL	Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.00
Project Scientist, Marsha Wolf	450	1,800	750	0	3,000	0.63
Co-Investigator, Matt Bershady	0	0	0	0	0	0.00
Co-Investigator, Amy Barger	0	0	0	0	0	0.00
Sr. Scientist Advisor, Ken Nordsieck	75	75	0	0	150	0.03
Project Manager, Mark Mulligan	0	0	0	0	0	0.00
Quality Assurance & Safety Manager, Tom Demki	0	0	0	0	0	0.00
Systems Engineer, Don Thielman	0	0	0	0	0	0.00
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.00
Lead Mechanical Engineer, Mike Smith	30	120	50	0	200	0.04
Electronics Technician	0	0	40	0	40	0.01
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	0.00
Software Programmer, Jeff Percival	0	0	0	0	0	0.00
Postdoc, Ryan Doering	0	0	0	0	0	0.00
Mechanical Engineer, Bill Mason	150	600	250	0	1,000	0.21
Designers*	0	480	0	0	480	0.10
Machinist	0	350	100	0	450	0.09
Instructor	0	0	0	0	0	0.00
Co-Investigator, Ted Wiliams	0	0	0	0	0	0.00
Controls Engineer, Ron Koch*	0	0	0	0	0	0.00
Graduate Students	225	1,650	750	0	2,625	0.55
Undergraduate Students	0	0	0	0	0	0.00
*Labor costs for these resources are presened in Sub	contracts/Services.		-		1	
TOTAL HOURS:	930	5,075	1,940	0	7,945	1.66
TOTAL FTEs:	2.07	2.82	1.08	0.00	1.66	
			-	-		
SALARY	\$36,024	\$152,609	\$62,829	\$0	\$251,462	
FRINGE	\$11,270	\$51,521	\$21,531	\$0	\$84,322	
TOTAL LABOR	\$47,294	\$204,130	\$84,360	\$0	\$335,784	
				"		
MATERIAL	\$4,250	\$15,250	\$4,500	\$0	\$24,000	
				"		
CAPITAL EQUIPMENT	\$8,378	\$113,805	\$11,250	\$0	\$133,433	
		'	'	"		
TRAVEL	\$0	\$0	\$0	\$0	\$0	
		'	'	"		
SUBCONTRACTS / SERVICES	\$0	\$25,680	\$0	\$0	\$25,680	
TOTAL DIRECT	\$68,463	\$389,878	\$105,450	\$0	\$563,791	
TOTAL INDIRECT	\$0	\$0	\$0	\$0	\$0	
TOTAL	\$68,463	\$389,878	\$105,450	\$0	\$563,791	
TOTAL	Ψ00,-100	ψ000,070	Ψ100,-100	ΨΟ	ψοσο, εστ	

2.1 Optical Design	PY01	PY02	PY03	PY04	O/H RATE:	45.0%
	2008-2009	2009-2010	2010-2011	2011-2012	TOTAL	Ave FTE
ABOR	APR-JUN	JUL - JUN	JUL - JUN	JUL - MAR		Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.0
Project Scientist, Marsha Wolf	450	1,800	750	0	3,000	0.6
Co-Investigator, Matt Bershady	0	0	0	0	0	0.0
Co-Investigator, Amy Barger	0	0	0	0	0	0.0
Sr. Scientist Advisor, Ken Nordsieck	75	75	0	0	150	0.0
Project Manager, Mark Mulligan	0	0	0	0	0	0.0
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0.0
Systems Engineer, Don Thielman	0	0	0	0	0	0.0
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.0
Lead Mechanical Engineer, Mike Smith	0	0	0	0	0	0.0
Electronics Technician	0	0	0	0	0	0.0
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	0.0
Software Programmer, Jeff Percival	0	0	0	0	0	0.0
Postdoc, Ryan Doering	0	0	0	0	0	0.0
Mechanical Engineer, Bill Mason	0	0	0	0	0	0.0
Designers*	0	0	0	0	0	0.0
Machinist	0	0	0	0	0	0.0
Instructor	0	0	0	0	0	0.0
Co-Investigator, Ted Wiliams	0	0	0	0	0	0.0
Controls Engineer, Ron Koch*	0	0	0	0	0	0.0
Graduate Students	225	1,650	750	0	2,625	0.5
Undergraduate Students	0	0	0	0	0	0.0
*Labor costs for these resources are presened in Subc	contracts/Services.					
TOTAL HOURS:	750	3,525	1,500	0	5,775	1.2
TOTAL FTEs:	1.67	1.96	0.83	0.00	1.20	
_						
SALARY	\$26,748	\$107,291	\$43,845	\$0	\$177,884	
FRINGE	\$7,699	\$33,169	\$13,965	\$0	\$54,833	
TOTAL LABOR	\$34,447	\$140,460	\$57,810	\$0	\$232,717	
MATERIAL						
SolidWorks Maintenance (MJW)	\$0	\$750	\$0	\$0	\$750	
Computer (PS)	\$3,000	\$0	\$0	\$0	\$3,000	
Software (PS)	\$1,000	\$0	\$0	\$0	\$1,000	
Computer (Grad)	\$0	\$3,000	\$3,000	\$0	\$6,000	
Software (Grad)	\$0	\$1,000	\$1,000	\$0	\$2,000	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
TOTAL	\$4,000	\$4,750	\$4,000	\$0	\$12,750	
CAPITAL EQUIPMENT						
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
TOTAL	\$0	\$0	\$0	\$0	\$0	
ravel "						
Meet w/ Harland	\$1,761	\$0	\$0	\$0	\$1,761	
	\$0	\$0	\$0	\$0	\$0	
TOTAL	\$1,761	\$0	\$0	\$0	\$1,761	
SUBCONTRACTS / SERVICES	. , , ,				. ,	
Tution Remission	\$1,780	\$16,020	\$5,340	\$0	\$23,140	
Dr. Harland Epps, Optical Design	\$5,000	\$15,000	\$0	\$0	\$20,000	
Paradigm Design	\$0	\$0	\$0	\$0	\$0	
Bit7	\$0	\$0	\$0	\$0	\$0	
TOTAL	\$6,780	\$31,020	\$5,340	\$0	\$43,140	
TOTAL DIRECT	\$46,989	\$176,231	\$67,150	\$0	\$290,370	
TOTAL INDIRECT	\$46,989	\$176,231	\$67,150	\$0 \$0	\$290,370	
				i i		
TOTAL	\$46,989	\$176,231	\$67,150	\$0	\$290,370	

2 Dichrioc	PY01 2008-2009	PY02 2009-2010	PY03 2010-2011	PY04 2011-2012	O/H RATE:	45.0% Ave FTE
BOR	2008-2009 APR-JUN	2009-2010 JUL - JUN	2010-2011 JUL - JUN	2011-2012 JUL - MAR	TOTAL	
Principal Investigator, Andrew Sheinis	APR-JUN 0	JUL - JUN	JUL - JUN	JUL - MAR	0	Project Life 0.0
Project Scientist, Marsha Wolf	0	0	0	0	0	0.0
Co-Investigator, Matt Bershady	0	0	0	0	0	0.0
Co-Investigator, Amy Barger	0	0	0	0	0	0.0
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.0
Project Manager, Mark Mulligan	0	0	0	0	0	0.0
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0.0
Systems Engineer, Don Thielman	0	0	0	0	0	0.0
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.0
Lead Mechanical Engineer, Mike Smith	0	0	0	0	0	0.0
Electronics Technician	0	0	0	0	0	0.0
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	0.0
Software Programmer, Jeff Percival	0	0	0	0	0	0.0
Postdoc, Ryan Doering	0	0	0	0	0	0.0
Mechanical Engineer, Bill Mason	45	180	75	0	300	0.0
Designers*	0	120	0	0	120	0.0
Machinist	0	100	50	0	150	0.0
Instructor	0	0	0	0	0	0.0
Co-Investigator, Ted Wiliams	0	0	0	0	0	0.0
Controls Engineer, Ron Koch*	0	0	0	0	0	0.0
Graduate Students	0	0	0	0	0	0.0
Undergraduate Students	0	0	0	0	0	0.0
*Labor costs for these resources are presened in Subc	ontracts/Services.					
TOTAL HOURS:	45	400	125	0	570	0.1
TOTAL FTEs:	0.10	0.22	0.07	0.00	0.12	
_						
SALARY	\$2,395	\$11,927	\$5,163	\$0	\$19,485	
FRINGE	\$922	\$4,850	\$2,116	\$0	\$7,888	
TOTAL LABOR						
TOTAL LABOR	\$3,317	\$16,777	\$7,279	\$0	\$27,373	
TERIAL						
TERIAL Lens holder	\$0	\$750	\$0	\$0	\$750	
TERIAL Lens holder Material	\$0 \$0	\$750 \$250	\$0 \$0	\$0 \$0	\$750 \$250	
TERIAL Lens holder Material Miscellaneous	\$0 \$0 \$0	\$750 \$250 \$500	\$0 \$0 \$0	\$0 \$0 \$0	\$750 \$250 \$500	
Material Miscellaneous SolidWorks Annual Fee (WPM)	\$0 \$0 \$0 \$250	\$750 \$250 \$500 \$750	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$750 \$250 \$500 \$1,000	
TERIAL Lens holder Material Miscellaneous	\$0 \$0 \$0 \$250 \$0	\$750 \$250 \$500 \$750 \$2,300	\$0 \$0 \$0 \$0 \$50	\$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$1,000 \$2,800	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)	\$0 \$0 \$0 \$250 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0	\$0 \$0 \$0 \$0 \$0 \$500	\$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$1,000 \$2,800 \$0	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)	\$0 \$0 \$0 \$250 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$500 \$500 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$1,000 \$2,800 \$0	
Material Miscellaneous SolidWorks Annual Fee (WPM)	\$0 \$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$500 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)	\$0 \$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$500 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0	
ATERIAL Lens holder Material Miscellaneous SolidWorks Annual Fee (WPM) SolidWorks PDM (WPM)  TOTAL	\$0 \$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$500 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0	
ATERIAL Lens holder Material Miscellaneous SolidWorks Annual Fee (WPM) SolidWorks PDM (WPM)  TOTAL	\$0 \$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$250	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$0 \$0 \$4,550	\$0 \$0 \$0 \$0 \$500 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$0 \$5,300	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT  Mirror blank	\$0 \$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$250	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$0 \$10,000	\$0 \$0 \$0 \$0 \$500 \$0 \$0 \$0 \$0 \$500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$0 \$5,300	
TERIAL Lens holder Material Miscellaneous SolidWorks Annual Fee (WPM) SolidWorks PDM (WPM)  TOTAL PITAL EQUIPMENT Mirror blank Mirror figuring	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$250	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$0 \$10,000 \$10,000	\$0 \$0 \$0 \$0 \$500 \$0 \$0 \$0 \$0 \$500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$0 \$5,300	
TERIAL Lens holder Material Miscellaneous SolidWorks Annual Fee (WPM) SolidWorks PDM (WPM)  TOTAL PITAL EQUIPMENT Mirror blank	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$250	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$0 \$10,000 \$10,000 \$3,750	\$0 \$0 \$0 \$0 \$500 \$0 \$0 \$0 \$500 \$500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$10,000 \$15,000	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT  Mirror blank  Mirror figuring	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$250	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$0 \$10,000 \$10,000 \$3,750	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$11,250	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$10,000 \$0	
TERIAL Lens holder Material Miscellaneous SolidWorks Annual Fee (WPM) SolidWorks PDM (WPM)  TOTAL PITAL EQUIPMENT Mirror blank Mirror figuring Mirror coating	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$250	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$10,000 \$10,000 \$3,750 \$0	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$11,250 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$10,000 \$15,000 \$0 \$0	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT  Mirror blank  Mirror figuring  Mirror coating	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$250	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$0 \$10,000 \$10,000 \$3,750	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$11,250	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$10,000 \$0	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT  Mirror blank  Mirror figuring  Mirror coating	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$250 \$0 \$0 \$0 \$250	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$10,000 \$10,000 \$3,750 \$0 \$0 \$0	\$0 \$0 \$0 \$500 \$0 \$0 \$0 \$0 \$500 \$500 \$50	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$10,000 \$15,000 \$0 \$0 \$0	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT  Mirror blank  Mirror figuring  Mirror coating	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$10,000 \$10,000 \$3,750 \$0 \$0 \$0	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$500 \$11,250 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$10,000 \$15,000 \$0 \$0 \$0	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT  Mirror blank  Mirror figuring  Mirror coating  TOTAL  AVEL	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$10,000 \$10,000 \$3,750 \$0 \$0 \$23,750	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$500 \$11,250 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$10,000 \$15,000 \$0 \$0 \$0 \$0	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT  Mirror blank  Mirror figuring  Mirror coating  TOTAL  AVEL	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$10,000 \$10,000 \$3,750 \$0 \$0 \$0	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$500 \$11,250 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$10,000 \$15,000 \$0 \$0 \$0	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT  Mirror blank  Mirror figuring  Mirror coating  TOTAL  AVEL	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$4,550 \$10,000 \$10,000 \$3,750 \$0 \$0 \$23,750	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$500 \$11,250 \$0 \$11,250 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$15,000 \$0 \$0 \$0 \$0 \$0 \$0	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT  Mirror blank  Mirror figuring  Mirror coating  TOTAL  AVEL	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$4,550 \$10,000 \$10,000 \$3,750 \$0 \$0 \$23,750	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$500 \$11,250 \$0 \$11,250 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$15,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$15,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
ATERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT  Mirror blank  Mirror figuring  Mirror coating  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$4,550 \$10,000 \$110,000 \$3,750 \$0 \$0 \$23,750	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$500 \$11,250 \$0 \$11,250 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$15,000 \$0 \$0 \$35,000	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT  Mirror blank  Mirror figuring  Mirror coating  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$0 \$4,550 \$10,000 \$10,000 \$3,750 \$0 \$23,750 \$0 \$0 \$0	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$500 \$11,250 \$0 \$11,250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$15,000 \$0 \$35,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TERIAL Lens holder Material Miscellaneous SolidWorks Annual Fee (WPM) SolidWorks PDM (WPM)  TOTAL PITAL EQUIPMENT Mirror blank Mirror figuring Mirror coating  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$250 \$0 \$0 \$250 \$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$10,000 \$10,000 \$3,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$10,00	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$500 \$11,250 \$0 \$11,250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$10,000 \$15,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TERIAL  Lens holder  Material  Miscellaneous  SolidWorks Annual Fee (WPM)  SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT  Mirror blank  Mirror figuring  Mirror coating  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$0 \$4,550 \$10,000 \$10,000 \$3,750 \$0 \$23,750 \$0 \$0 \$0	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$500 \$11,250 \$0 \$11,250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$15,000 \$0 \$35,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TERIAL Lens holder Material Miscellaneous SolidWorks Annual Fee (WPM) SolidWorks PDM (WPM)  TOTAL  PITAL EQUIPMENT Mirror blank Mirror figuring Mirror coating  TOTAL  AVEL  TOTAL  POTAL  POTAL  TOTAL  TOTAL  TOTAL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$250 \$0 \$0 \$250 \$0 \$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$0 \$4,550 \$10,000 \$10,000 \$3,750 \$0 \$0 \$23,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$10,00	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$500 \$11,250 \$0 \$0 \$11,250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$10,000 \$15,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
ATERIAL Lens holder Material Miscellaneous SolidWorks Annual Fee (WPM) SolidWorks PDM (WPM)  TOTAL APITAL EQUIPMENT Mirror blank Mirror figuring Mirror coating  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7 TOTAL  TOTAL  TOTAL  TOTAL  TOTAL	\$0 \$0 \$250 \$0 \$0 \$250 \$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$10,000 \$10,000 \$3,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$10,00	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$500 \$11,250 \$0 \$11,250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$10,000 \$15,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
ATERIAL Lens holder Material Miscellaneous SolidWorks Annual Fee (WPM) SolidWorks PDM (WPM)  TOTAL APITAL EQUIPMENT Mirror blank Mirror figuring Mirror coating  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL	\$0 \$0 \$250 \$0 \$0 \$250 \$0 \$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$750 \$250 \$500 \$750 \$2,300 \$0 \$0 \$0 \$0 \$4,550 \$10,000 \$10,000 \$3,750 \$0 \$0 \$23,750 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$10,00	\$0 \$0 \$0 \$500 \$500 \$0 \$0 \$500 \$500 \$11,250 \$0 \$0 \$11,250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$750 \$250 \$500 \$1,000 \$2,800 \$0 \$0 \$0 \$5,300 \$10,000 \$10,000 \$15,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	

2.3 Doublet	PY01	PY02	PY03	PY04	O/H RATE:	45.09	
	2008-2009	2009-2010	2010-2011	2011-2012	TOTAL	Ave FTE	
LABOR Andrew Chairin	APR-JUN	JUL - JUN	JUL - JUN	JUL - MAR	0	Project Life	
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.00	
Project Scientist, Marsha Wolf	0	0	0	0	0	0.00	
Co-Investigator, Matt Bershady Co-Investigator, Amy Barger	0	0	0	0	0	0.00	
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.00	
Project Manager, Mark Mulligan	0	0	0	0	0	0.00	
Quality Assurance & Safety Manager, Tom Demke		0	0	0	0	0.00	
Systems Engineer, Don Thielman	0	0	0	0	0	0.00	
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.00	
Lead Mechanical Engineer, Mike Smith	0	0	0	0	0	0.00	
Electronics Technician	0	0	0	0	0	0.00	
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	0.00	
Software Programmer, Jeff Percival	0	0	0	0	0	0.00	
Postdoc, Ryan Doering	0	0	0	0	0	0.00	
Mechanical Engineer, Bill Mason	60	240	100	0	400	0.08	
Designers*	0	120	0	0	120	0.03	
Machinist	0	150	0	0	150	0.03	
Instructor	0	0	0	0	0	0.00	
Co-Investigator, Ted Wiliams	0	0	0	0	0	0.00	
Controls Engineer, Ron Koch*	0	0	0	0	0	0.00	
Graduate Students	0	0	0	0	0	0.00	
Undergraduate Students	0	0	0	0	0	0.00	
*Labor costs for these resources are presened in Sub-	contracts/Services.						
TOTAL HOURS:	60	510	100	0	670	0.14	
TOTAL FTEs:	0.13	0.28	0.06	0.00	0.14		
,							
SALARY	\$3,194	\$16,294	\$5,325	\$0	\$24,813		
FRINGE	\$1,229	\$6,661	\$2,050	\$0	\$9,940		
TOTAL LABOR	\$4,423	\$22,955	\$7,375	\$0	\$34,753		
MATERIAL							
Lens holder	\$0	\$750	\$0	\$0	\$750		
Material	\$0	\$250	\$0	\$0	\$250		
Miscellaneous	\$0	\$1,000	\$0	\$0	\$1,000		
	\$0	\$0	\$0	\$0	\$0		
	\$0	\$0	\$0	\$0	\$0		
	\$0	\$0	\$0	\$0	\$0		
	\$0	\$0	\$0	\$0	\$0		
	\$0	\$0	\$0	\$0	\$0		
	\$0	\$0	\$0	\$0	\$0		
TOTAL	\$0	\$2,000	\$0	\$0	\$2,000		
CAPITAL EQUIPMENT	60.075	040 ===		0.5	407.000		
Optic Blank	\$8,378	\$19,550	\$0	\$0	\$27,928		
Lens grinding, surfacing, and figuring	\$0	\$22,000	\$0	\$0	\$22,000		
Coating	\$0	\$8,000	\$0	\$0	\$8,000		
	\$0 \$0	\$0 \$0	\$0 \$0	\$0	\$0		
TOTAL				\$0	\$0 \$57,039		
TRAVEL TRAVEL	\$8,378	\$49,550	\$0	\$0	\$57,928		
IRAVEL	0.0	<b>6</b> 0	60	<b>60</b>	<b>60</b>		
	\$0	\$0	\$0	\$0	\$0		
TOTAL	\$0 \$0	\$0	\$0 \$0	\$0	\$0 \$0		
SUBCONTRACTS / SERVICES	\$0	\$0	\$0	\$0	\$0		
SUBCONTRACTS / SERVICES	\$0	\$0	\$0	\$0	\$0		
	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0			
Paradiam Docian	\$0 \$0				\$0		
Paradigm Design	\$0 \$0	\$0 \$6.420	\$0 \$0	\$0	\$0 \$6.430		
Bit7		\$6,420 \$6,420	\$0 \$0	\$0	\$6,420		
TOTAL	\$0	\$6,420	\$0	\$0	\$6,420		
TOTAL DIDECT	<b>640.000</b>	<b>600 000</b>	<b>67.07</b> 5	40	6404 440		
TOTAL INDIRECT	\$12,803	\$80,932	\$7,375	\$0	\$101,110		
TOTAL INDIRECT	\$0	\$0	\$0	\$0	\$0		
TOTAL	\$12,803	\$80,932	\$7,375	\$0	\$101,110		

4 Fold Mirror	PY01	PY02	PY03	PY04	O/H RATE:	45.0°
DOD	2008-2009	2009-2010	2010-2011	2011-2012	TOTAL	Ave FTE
ABOR	APR-JUN	JUL - JUN	JUL - JUN	JUL - MAR	0	Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.0
Project Scientist, Marsha Wolf Co-Investigator, Matt Bershady	0	0	0	0	0	0.0
Co-Investigator, Amy Barger	0	0	0	0	0	0.0
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.0
Project Manager, Mark Mulligan	0	0	0	0	0	0.0
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0.0
Systems Engineer, Don Thielman	0	0	0	0	0	0.0
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.0
Lead Mechanical Engineer, Mike Smith	0	0	0	0	0	0.0
Electronics Technician	0	0	0	0	0	0.0
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	0.0
Software Programmer, Jeff Percival	0	0	0	0	0	0.0
Postdoc, Ryan Doering	0	0	0	0	0	0.0
Mechanical Engineer, Bill Mason	45	180	75	0	300	0.0
Designers*	0	120	0	0	120	0.0
Machinist	0	100	50	0	150	0.0
Instructor	0	0	0	0	0	0.
Co-Investigator, Ted Williams	0	0	0	0	0	0.0
Controls Engineer, Ron Koch*	0	0	0	0	0	0.0
Graduate Students	0	0	0	0	0	0.
Undergraduate Students	0	0	0	0	0	0.
*Labor costs for these resources are presened in Subc						
TOTAL HOURS:	45	400	125	0	570	0.
TOTAL FTEs:	0.10	0.22	0.07	0.00	0.12	
SALARY	00.005	¢44 027	OF 400	\$0	\$19,485	
	\$2,395	\$11,927	\$5,163			
FRINGE	\$922	\$4,850	\$2,116	\$0	\$7,888	
FRINGE TOTAL LABOR						
FRINGE TOTAL LABOR ATERIAL	\$922 \$3,317	\$4,850 \$16,777	\$2,116 \$7,279	\$0 \$0	\$7,888 \$27,373	
FRINGE TOTAL LABOR ATERIAL Lens holder	\$922 \$3,317 \$0	\$4,850 \$16,777 \$750	\$2,116 \$7,279	\$0 \$0	\$7,888 \$27,373 \$750	
TOTAL LABOR ATERIAL Lens holder Material	\$922 \$3,317 \$0 \$0	\$4,850 \$16,777 \$750 \$250	\$2,116 \$7,279 \$0 \$0	\$0 \$0 \$0 \$0	\$7,888 \$27,373 \$750 \$250	
FRINGE TOTAL LABOR ATERIAL Lens holder	\$922 \$3,317 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000	\$2,116 \$7,279 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$7,888 \$27,373 \$750 \$250 \$1,000	
TOTAL LABOR ATERIAL Lens holder Material	\$922 \$3,317 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0	\$7,888 \$27,373 \$750 \$250 \$1,000	
TOTAL LABOR ATERIAL Lens holder Material	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0	
TOTAL LABOR  ATERIAL  Lens holder  Material	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0	
TOTAL LABOR  ATERIAL  Lens holder  Material	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0	
TOTAL LABOR  ATERIAL  Lens holder  Material	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR  ATERIAL  Lens holder  Material  Miscellaneous	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR  ATERIAL  Lens holder  Material  Miscellaneous  TOTAL	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR  ATERIAL  Lens holder  Material  Miscellaneous  TOTAL  APITAL EQUIPMENT	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR  ATERIAL  Lens holder  Material  Miscellaneous  TOTAL	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$2,000	
FRINGE TOTAL LABOR  ATERIAL  Lens holder  Material  Miscellaneous  TOTAL  APITAL EQUIPMENT	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR  ATERIAL  Lens holder  Material  Miscellaneous  TOTAL  APITAL EQUIPMENT	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR  ATERIAL  Lens holder  Material  Miscellaneous  TOTAL  APITAL EQUIPMENT	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR  ATERIAL  Lens holder  Material  Miscellaneous  TOTAL  APITAL EQUIPMENT  Purchase Lens	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR ATERIAL Lens holder Material Miscellaneous  TOTAL APITAL EQUIPMENT Purchase Lens  TOTAL	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR  ATERIAL  Lens holder  Material  Miscellaneous  TOTAL  APITAL EQUIPMENT  Purchase Lens	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$2,000 \$7,500 \$0 \$0 \$0 \$0 \$1,000	
FRINGE TOTAL LABOR ATERIAL Lens holder Material Miscellaneous  TOTAL APITAL EQUIPMENT Purchase Lens  TOTAL	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR ATERIAL Lens holder Material Miscellaneous  TOTAL APITAL EQUIPMENT Purchase Lens  TOTAL AVEL	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR ATERIAL Lens holder Material Miscellaneous  TOTAL APITAL EQUIPMENT Purchase Lens  TOTAL RAVEL TOTAL	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR ATERIAL Lens holder Material Miscellaneous  TOTAL APITAL EQUIPMENT Purchase Lens  TOTAL AVEL	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR ATERIAL Lens holder Material Miscellaneous  TOTAL APITAL EQUIPMENT Purchase Lens  TOTAL RAVEL TOTAL	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
FRINGE TOTAL LABOR ATERIAL Lens holder Material Miscellaneous  TOTAL APITAL EQUIPMENT Purchase Lens  TOTAL AVEL  BECONTRACTS / SERVICES	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$2,000 \$7,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
FRINGE TOTAL LABOR  ATERIAL  Lens holder  Material  Miscellaneous  TOTAL  APITAL EQUIPMENT  Purchase Lens  TOTAL  BAVEL  JBCONTRACTS / SERVICES	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$2,000 \$7,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
ATERIAL Lens holder Material Miscellaneous  APITAL EQUIPMENT Purchase Lens  TOTAL  AVEL  BAVEL  TOTAL  BAVEL  TOTAL  Paradigm Design Bit7	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$2,000 \$7,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$2,000 \$7,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
FRINGE TOTAL LABOR ATERIAL Lens holder Material Miscellaneous  TOTAL APITAL EQUIPMENT Purchase Lens  TOTAL AVEL  BECONTRACTS / SERVICES	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$2,000 \$7,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
ATERIAL Lens holder Material Miscellaneous  TOTAL APITAL EQUIPMENT Purchase Lens  TOTAL BECONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL LABOR  TOTAL TOTAL	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$2,000 \$7,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$2,000 \$7,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
ATERIAL Lens holder Material Miscellaneous  TOTAL APITAL EQUIPMENT Purchase Lens  TOTAL BRAVEL  TOTAL  Paradigm Design Bit7  TOTAL DIRECT	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$2,000 \$7,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
ATERIAL Lens holder Material Miscellaneous  APITAL EQUIPMENT Purchase Lens  TOTAL  AVEL  BECONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL LABOR  TOTAL  TOTAL  TOTAL	\$922 \$3,317 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,850 \$16,777 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$2,000 \$7,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$2,116 \$7,279 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,888 \$27,373 \$750 \$250 \$1,000 \$0 \$0 \$0 \$0 \$0 \$2,000 \$7,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	

2.5 Fold Mirror Mechanism	PY01	PY02	PY03	PY04	O/H RATE:	45.0%
	2008-2009	2009-2010	2010-2011	2011-2012	TOTAL	Ave FTE
ABOR	APR-JUN	JUL - JUN	JUL - JUN	JUL - MAR		Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.0
Project Scientist, Marsha Wolf	0	0	0	0	0	0.0
Co-Investigator, Matt Bershady	0	0	0	0	0	0.0
Co-Investigator, Amy Barger	0	0	0	0	0	0.0
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.0
Project Manager, Mark Mulligan	0	0	0	0	0	0.0
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0.0
Systems Engineer, Don Thielman	0	0	0	0	0	0.0
Electrical Engineer, Paul Sendelbach Lead Mechanical Engineer, Mike Smith	30	120	50	0	200	0.0
Electronics Technician	0	0	40	0	40	0.0
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	0.0
Software Programmer, Jeff Percival	0	0	0	0	0	0.0
Postdoc, Ryan Doering	0	0	0	0	0	0.0
Mechanical Engineer, Bill Mason	0	0	0	0	0	0.0
Designers*	0	120	0	0	120	0.0
Machinist	0	0	0	0	0	0.0
Instructor	0	0	0	0	0	0.0
Co-Investigator, Ted Williams	0	0	0	0	0	0.0
Controls Engineer, Ron Koch*	0	0	0	0	0	0.0
Graduate Students	0	0	0	0	0	0.0
Undergraduate Students	0	0	0	0	0	0.0
*Labor costs for these resources are presened in Subd	contracts/Services.		· · · · · · · · · · · · · · · · · · ·	"	<u> </u>	
TOTAL HOURS:	30	240	90	0	360	0.0
TOTAL FTEs:	0.07	0.13	0.05	0.00	0.08	
					<u> </u>	
SALARY	\$1,292	\$5,170	\$3,333	\$0	\$9,795	
FRINGE	\$498	\$1,991	\$1,284	\$0	\$3,773	
TOTAL LABOR	\$1,790	\$7,161	\$4,617	\$0	\$13,568	
MATERIAL						
Linear Encoder (1)	\$0	\$1,000	\$0	\$0	\$1,000	
Limit Sensors (11)	\$0	\$500	\$0	\$0	\$500	
Material	\$0	\$150	\$0	\$0	\$150	
Misc	\$0	\$300	\$0	\$0	\$300	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
TOTAL	\$0	\$1,950	\$0	\$0	\$1,950	
CAPITAL EQUIPMENT						
Tip/Tilt Stage+Piston Piezo [Physik P-541.Z & P-2	\$0	\$11,743	\$0	\$0	\$11,743	
	\$0	\$2,490	\$0	\$0	\$2,490	
Controller, Power Supply [Physik E-500.0]	, -				\$6,865	
Servo Modules [Physik E-509.S3 & E-509.C1A]	\$0	\$6,865	\$0	\$0		
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0]	\$0 \$0	\$6,865 \$4,772	\$0	\$0	\$4,772	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3]	\$0 \$0 \$0	\$6,865 \$4,772 \$7,135	\$0 \$0	\$0 \$0	\$4,772 \$7,135	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0]  I/F Modules [Physik E516.i1 & E-516.i3]  TOTAL	\$0 \$0	\$6,865 \$4,772	\$0	\$0	\$4,772	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0]  I/F Modules [Physik E516.i1 & E-516.i3]  TOTAL	\$0 \$0 \$0 \$0	\$6,865 \$4,772 \$7,135 \$33,005	\$0 \$0 \$0	\$0 \$0 \$0	\$4,772 \$7,135 \$33,005	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3] TOTAL	\$0 \$0 \$0 \$0 \$0	\$6,865 \$4,772 \$7,135 \$33,005	\$0 \$0 \$0	\$0 \$0 \$0	\$4,772 \$7,135 \$33,005	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3] TOTAL TRAVEL	\$0 \$0 \$0 \$0 \$0 \$0	\$6,865 \$4,772 \$7,135 \$33,005	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$4,772 \$7,135 \$33,005 \$0 \$0	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3] TOTAL TRAVEL	\$0 \$0 \$0 \$0 \$0	\$6,865 \$4,772 \$7,135 \$33,005	\$0 \$0 \$0	\$0 \$0 \$0	\$4,772 \$7,135 \$33,005	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3] TOTAL TRAVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$6,865 \$4,772 \$7,135 \$33,005 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0	\$4,772 \$7,135 \$33,005 \$0 \$0 \$0	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3] TOTAL TRAVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$6,865 \$4,772 \$7,135 \$33,005 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,772 \$7,135 \$33,005 \$0 \$0 \$0	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3] TOTAL TRAVEL  TOTAL SUBCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$6,865 \$4,772 \$7,135 \$33,005 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3] TOTAL  TRAVEL  TOTAL  SUBCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,865 \$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0 \$0	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3] TOTAL  TRAVEL  TOTAL  SUBCONTRACTS / SERVICES  Paradigm Design Bit7	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,865 \$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3] TOTAL  TRAVEL  TOTAL  SUBCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,865 \$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0 \$0	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3] TOTAL TRAVEL  TOTAL SUBCONTRACTS / SERVICES  Paradigm Design Bit7 TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,865 \$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3] TOTAL TRAVEL  TOTAL SUBCONTRACTS / SERVICES  Paradigm Design Bit7 TOTAL TOTAL TOTAL TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,865 \$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0 \$0 \$6,420 \$48,539	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0 \$0 \$6,420 \$54,947	
Servo Modules [Physik E-509.S3 & E-509.C1A] Amplifie Modules [Physik E-503.0 & E-508.0] I/F Modules [Physik E516.i1 & E-516.i3] TOTAL TRAVEL  TOTAL SUBCONTRACTS / SERVICES  Paradigm Design Bit7 TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,865 \$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$4,772 \$7,135 \$33,005 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	

GRATING ASSEMBLY	PY01	PY02	PY03	PY04	O/H RATE:	45.0
200	2008-2009	2009-2010	2010-2011	2011 - 2012	TOTAL	Ave FTE
BOR	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR	0	Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.
Project Scientist, Marsha Wolf	0	0	0	0	0	0.
Co-Investigator, Matt Bershady	0	0	0	0	0	0.
Co-Investigator, Amy Barger	0	0	0	0	0	0.
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.
Project Manager, Mark Mulligan	0	0	0		0	0.
Quality Assurance & Safety Manager, Tom Demke Systems Engineer, Don Thielman	0	0	0	0	0	0.
	0	0	0	0	0	0
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	
Lead Mechanical Engineer, Mike Smith Electronics Technician	0	0	100	0	100	0
	45	180	75	0	300	0
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	0
Software Programmer, Jeff Percival	0	0	0	0	0	
Postdoc, Ryan Doering	-	0		-	0	0
Mechanical Engineer, Bill Mason	0	-	0	0	-	0
Designers*	0	150	0	0	150	0
Machinist	0	100	50	0	150	0
Instructor	0	0	0	0	0	0
Co-Investigator, Ted Williams	0	0	0	0	0	0
Controls Engineer, Ron Koch*	0	0	0	0	0	0
Graduate Students	0	0	0	0	0	0
Undergraduate Students	0	0	0	0	0	0
*Labor costs for these resources are presened in Subc						
TOTAL HOURS:	45	430	225	0	700	0
TOTAL FTEs:	0.10	0.24	0.13	0.00	0.15	
SALARY	\$0	\$2,346	\$4,118	\$0	\$6,464	
FRINGE	\$0	\$1,162	\$1,716	\$0	\$2,878	
TOTAL LABOR	\$0	\$3,508	\$5,834	\$0	\$9,342	
TERIAL						
Material	\$0	\$500	\$0	\$0	\$500	
Holder	\$0	\$0	\$500	\$0	\$500	
Holder Bearings	\$0	\$0 \$0		\$0 \$0	\$500 \$500	
Holder		\$0	\$500	\$0	\$500	
Holder Bearings	\$0	\$0 \$0	\$500 \$500	\$0 \$0	\$500 \$500	
Holder Bearings Drive Screw	\$0 \$0	\$0 \$0 \$500	\$500 \$500 \$0	\$0 \$0 \$0	\$500 \$500 \$500	
Holder Bearings Drive Screw Drive Gear, coupling, or other device	\$0 \$0 \$0	\$0 \$0 \$500 \$300	\$500 \$500 \$0 \$0	\$0 \$0 \$0 \$0	\$500 \$500 \$500 \$300	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6)	\$0 \$0 \$0 \$0	\$0 \$0 \$500 \$300 \$120	\$500 \$500 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$500 \$500 \$500 \$300 \$120	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6)	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$500 \$300 \$120 \$0	\$500 \$500 \$0 \$0 \$0 \$500	\$0 \$0 \$0 \$0 \$0 \$0	\$500 \$500 \$500 \$300 \$120 \$500	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6)	\$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$500 \$300 \$120 \$0 \$0	\$500 \$500 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$500 \$500 \$500 \$300 \$120 \$500 \$0	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$500 \$300 \$120 \$0 \$0	\$500 \$500 \$0 \$0 \$0 \$0 \$500 \$500 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$0	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$500 \$300 \$120 \$0 \$0	\$500 \$500 \$0 \$0 \$0 \$0 \$500 \$500 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$0	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL  PITAL EQUIPMENT  Grating Insertion Actuator (1) [Ultramotion HT17]	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420	\$500 \$500 \$0 \$0 \$0 \$0 \$500 \$0 \$1,500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$0 \$2,920	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL  PITAL EQUIPMENT  Grating Insertion Actuator (1) [Ultramotion HT17]  Grating Absolute Encoder (1)	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075	\$500 \$500 \$0 \$0 \$0 \$0 \$500 \$0 \$0 \$1,500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$0 \$2,920	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL PITAL EQUIPMENT Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-037]	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356	\$500 \$500 \$0 \$0 \$0 \$500 \$500 \$0 \$1,500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$2,920 \$750 \$1,075 \$8,356	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL PITAL EQUIPMENT Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-037 Grating Absolute Rotary Encoder (2)	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$500 \$0 \$1,500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL  PITAL EQUIPMENT  Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-037] Grating Absolute Rotary Encoder (2) Gratings	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000	\$500 \$500 \$0 \$0 \$0 \$500 \$500 \$0 \$1,500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL  PITAL EQUIPMENT  Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-037] Grating Absolute Rotary Encoder (2) Gratings  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$500 \$0 \$1,500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL  PITAL EQUIPMENT  Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-03; Grating Absolute Rotary Encoder (2) Gratings  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL  PITAL EQUIPMENT  Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-037] Grating Absolute Rotary Encoder (2) Gratings  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL  PITAL EQUIPMENT  Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-03; Grating Absolute Rotary Encoder (2) Gratings  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL  PITAL EQUIPMENT  Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-03; Grating Absolute Rotary Encoder (2) Gratings  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL  PITAL EQUIPMENT  Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-03; Grating Absolute Rotary Encoder (2) Gratings  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL PITAL EQUIPMENT Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-037 Grating Absolute Rotary Encoder (2) Gratings  TOTAL  AVEL Travel to vendor	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL PITAL EQUIPMENT Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-037 Gratings Absolute Rotary Encoder (2) Gratings  TOTAL AVEL Travel to vendor	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL PITAL EQUIPMENT Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-037 Grating Absolute Rotary Encoder (2) Gratings  TOTAL  AVEL Travel to vendor	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0 \$1,441	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$500 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0 \$1,441	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL PITAL EQUIPMENT Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-037 Gratings Absolute Rotary Encoder (2) Gratings  TOTAL AVEL Travel to vendor	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0	\$500 \$500 \$500 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL PITAL EQUIPMENT Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-037 Gratings TOTAL AVEL Travel to vendor  TOTAL BCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0 \$0 \$0 \$1,441	\$500 \$500 \$500 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0 \$0	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL PITAL EQUIPMENT Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Absolute Rotary Encoder (2) Gratings  TOTAL AVEL Travel to vendor  TOTAL BCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0 \$1,441	\$500 \$500 \$500 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0 \$1,441	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL  PITAL EQUIPMENT  Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-03; Grating Absolute Rotary Encoder (2) Gratings  TOTAL  AVEL  Travel to vendor  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$1,441	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0 \$1,441	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL PITAL EQUIPMENT Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Absolute Rotary Encoder (2) Gratings  TOTAL AVEL Travel to vendor  TOTAL BCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0 \$1,441	\$500 \$500 \$500 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0 \$1,441	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL  PITAL EQUIPMENT Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-03; Gratings TOTAL  AVEL Travel to vendor  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7 TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$1,441 \$0 \$0 \$1,441	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$500 \$300 \$120 \$500 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0 \$1,441	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL PITAL EQUIPMENT Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Absolute Rotary Encoder (2) Gratings  TOTAL AVEL Travel to vendor  TOTAL BCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL TOTAL TOTAL TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$1,441	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$300 \$120 \$500 \$0 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0 \$1,441	
Holder Bearings Drive Screw Drive Gear, coupling, or other device Hall Sensors (6) Miscellaneous  TOTAL  PITAL EQUIPMENT Grating Insertion Actuator (1) [Ultramotion HT17] Grating Absolute Encoder (1) Grating Rotation Stage Actuator (2) [Physik M-03; Gratings TOTAL  AVEL Travel to vendor  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7 TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$500 \$300 \$120 \$0 \$0 \$1,420 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$1,441 \$0 \$0 \$1,441	\$500 \$500 \$0 \$0 \$0 \$500 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$500 \$500 \$500 \$500 \$300 \$120 \$500 \$0 \$2,920 \$750 \$1,075 \$8,356 \$2,150 \$80,000 \$92,331 \$1,441 \$0 \$0 \$0 \$0 \$1,441	

4.0 FILTER & OPTICS STORAGE	PY01	PY02	PY03	PY04	O/H RATE:	45.0%
ASSEMBLY	2008-2009	2009-2010	2010-2011	2011 - 2012	TOTAL	Ave FTE
LABOR	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR		Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.00
Project Scientist, Marsha Wolf	0	0	0	0	0	0.00
Co-Investigator, Matt Bershady	0	0	0	0	0	0.00
Co-Investigator, Amy Barger Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.00
Project Manager, Mark Mulligan	0	0	0	0	0	0.00
Quality Assurance & Safety Manager, Tom Demke		0	0	0	0	0.00
Systems Engineer, Don Thielman	0	0	0	0	0	0.00
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.00
Lead Mechanical Engineer, Mike Smith	0	0	0	0	0	0.00
Electronics Technician	0	0	100	0	100	0.00
Opto-mechanical Engineer, Jeff Wong*	60	240	100	0	400	0.02
Software Programmer, Jeff Percival	0	0	0	0	0	0.00
Postdoc, Ryan Doering	0	0	0	0	0	0.00
Mechanical Engineer, Bill Mason	0	0	0	0	0	0.00
Designers*	0	150	0	0	150	0.03
Machinist	0	225	25	0	250	0.05
Instructor	0	0	0	0	0	0.00
Co-Investigator, Ted Wiliams	0	0	0	0	0	0.00
Controls Engineer, Ron Koch*	0	0	0	0	0	0.00
Graduate Students	0	0	0	0	0	0.00
Undergraduate Students	0	0	0	0	0	0.00
*Labor costs for these resources are presened in Sub	- 1	0	O	J <sub>  </sub>	J	0.00
TOTAL HOURS:	60	615	225	0	900	0.19
TOTAL FTES:	0.13	0.34	0.13	0.00	0.19	0.10
	0.10	0.01	0.10	0.00	00	
SALARY	\$0	\$5,279	\$3,532	\$0	\$8,811	
FRINGE	\$0	\$2,615	\$1,425	\$0	\$4,040	
TOTAL LABOR	\$0	\$7,894	\$4,957	\$0	\$12,851	
MATERIAL		, ,	, , , , ,		, ,,,,	
Material	\$0	\$750	\$0	\$0	\$750	
Storage optics drive screw	\$0	\$0	\$250	\$0	\$250	
Storage optics bearing blocks	\$0	\$0	\$750	\$0	\$750	
Filter insertion drive screw	\$0	\$0	\$250	\$0	\$250	
Filter insertion bearings	\$0	\$0	\$250	\$0	\$250	
Miscellaneous hardware	\$0	\$500	\$1,000	\$0	\$1,500	
SolidWorks PDM (JPW)	\$2,300	\$500	\$0	\$0	\$2,800	
Hall Sensor (60)	\$0	\$900	\$0	\$0	\$900	
	\$0	\$0	\$0	\$0	\$0	
TOTAL	\$2,300	\$2,650	\$2,500	\$0	\$7,450	
CAPITAL EQUIPMENT	1	1	1	"		
F-P Order Blocking Filters	\$0	\$70,200	\$163,800	\$0	\$234,000	
OSA Drive Actuator (2) [Ultramotion HT23]	\$0	\$1,900	\$0	\$0	\$1,900	
OSA Absolute Position Encoder (2)	\$0	\$2,150	\$0	\$0	\$2,150	
Filter Insertion & Lock Actuators (2) [Ultramotion	\$0	\$1,500	\$0	\$0	\$1,500	
Filter Absolute Position Encoder (1)	\$0	\$1,075	\$0	\$0	\$1,075	
TOTAL	\$0	\$76,825	\$163,800	\$0	\$240,625	
TRAVEL						
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
TOTAL	\$0	\$0	\$0	\$0	\$0	
SUBCONTRACTS / SERVICES						
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
Paradigm Design	\$4,500	\$18,000	\$7,500	\$0	\$30,000	
Bit7	\$0	\$8,025	\$0	\$0	\$8,025	
TOTAL	\$4,500	\$26,025	\$7,500	\$0	\$38,025	
TOTAL						
TOTAL						
TOTAL DIRECT	\$6,800	\$113,396	\$178,757	\$0	\$298,953	
	\$6,800 \$0	\$113,396 \$0	\$178,757 \$0	\$0 \$0	\$298,953 \$0	

	PY01	PY02	PY03	PY04	O/H RATE:	45.0°
ABOR	2008-2009	2009-2010	2010-2011	2011 - 2012	TOTAL	Ave FTE Project Life
Principal Investigator, Andrew Sheinis	APR - JUN	JUL - JUN 0	JUL - JUN	JUL - MAR	0	0.0
Project Scientist, Marsha Wolf	0	0	0	0	0	0.0
Co-Investigator, Matt Bershady	0	0	0	0	0	0.0
Co-Investigator, Amy Barger	0	0	0	0	0	0.0
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.0
Project Manager, Mark Mulligan	0	0	0	0	0	0.0
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0.0
Systems Engineer, Don Thielman	0	0	0	0	0	0.0
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.0
Lead Mechanical Engineer, Mike Smith	0	0	0	0	0	0.
Electronics Technician	0	0	160	0	160	0.
Opto-mechanical Engineer, Jeff Wong*	60	240	100	0	400	0.
Software Programmer, Jeff Percival	0	0	0	0	0	0.
Postdoc, Ryan Doering	0	0	0	0	0	0.0
Mechanical Engineer, Bill Mason	0	0	0	0	0	0.0
Designers*	0	150	0	0	150	0.0
Machinist	0	150	50	0	200	0.0
Instructor	0	0	0	0	0	0.0
Co-Investigator, Ted Wiliams	75	75	0	0	150	0.
Controls Engineer, Ron Koch*	0	0	0	0	0	0.
Graduate Students	0	0	0	0	0	0.
Undergraduate Students	0	0	0	0	0	0.
*Labor costs for these resources are presened in Subd	contracts/Services.					
TOTAL HOURS:	135	615	310	0	1,060	0.
TOTAL FTEs:	0.30	0.34	0.17	0.00	0.22	
_						
SALARY	\$6,890	\$10,409	\$5,885	\$0	\$23,184	
FRINGE	\$2,653	\$4,396	\$2,397	\$0	\$9,446	
TOTAL LABOR	\$9,543	\$14,805	\$8,282	\$0	\$32,630	
ATERIAL						
Material	\$0	\$750	\$0	\$0	\$750	
Bearings & precision guides	\$0	\$1,000	\$0	\$0	\$1,000	
Drive shaft	\$0	\$500	\$0	\$0	\$500	
Miscellaneous	\$0	\$750	\$250	\$0	\$1,000	
Hall Sensors (6)	\$0	\$90	\$0	\$0	\$90	
Pneumatic Lock (3)	\$0	\$900	\$0	\$0	\$900	
	\$0	\$0				
			\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0 \$0	\$0 \$0	\$0 \$0	
TOTAL			\$0	\$0	\$0	
APITAL EQUIPMENT	\$0 \$0	\$0 \$3,990	\$0 \$0 \$250	\$0 \$0 \$0	\$0 \$0 \$4,240	
APITAL EQUIPMENT F-P Insertion Actuator (1) [Ultramotion HT23]	\$0 \$0 \$0	\$0 \$3,990 \$950	\$0 \$0 \$250	\$0 \$0 \$0	\$0 \$0 \$4,240	
APITAL EQUIPMENT	\$0 \$0 \$0 \$0	\$0 \$3,990 \$950 \$1,075	\$0 \$0 \$250 \$0 \$250	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$4,240 \$950 \$1,075	
APITAL EQUIPMENT F-P Insertion Actuator (1) [Ultramotion HT23]	\$0 \$0 \$0 \$0 \$0 \$0	\$0 \$3,990 \$950 \$1,075 \$0	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$4,240 \$950 \$1,075 \$0	
APITAL EQUIPMENT F-P Insertion Actuator (1) [Ultramotion HT23]	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$3,990 \$950 \$1,075 \$0 \$0	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0	
APITAL EQUIPMENT  F-P Insertion Actuator (1) [Ultramotion HT23]  F-P Absolute Encoder (1)	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$3,990 \$950 \$1,075 \$0 \$0	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0	
APITAL EQUIPMENT  F-P Insertion Actuator (1) [Ultramotion HT23]  F-P Absolute Encoder (1)  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$3,990 \$950 \$1,075 \$0 \$0	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0	
APITAL EQUIPMENT  F-P Insertion Actuator (1) [Ultramotion HT23]  F-P Absolute Encoder (1)  TOTAL  RAVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$3,990 \$950 \$1,075 \$0 \$0 \$0 \$2,025	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$0 \$2,025	
APITAL EQUIPMENT  F-P Insertion Actuator (1) [Ultramotion HT23]  F-P Absolute Encoder (1)  TOTAL  RAVEL  Observe Fabry-Perot testing	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$3,990 \$950 \$1,075 \$0 \$0 \$2,025	\$0 \$0 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025	
APITAL EQUIPMENT  F-P Insertion Actuator (1) [Ultramotion HT23]  F-P Absolute Encoder (1)  TOTAL  RAVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$3,990 \$950 \$1,075 \$0 \$0 \$2,025	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708	
APITAL EQUIPMENT  F-P Insertion Actuator (1) [Ultramotion HT23]  F-P Absolute Encoder (1)  TOTAL  AVEL  Observe Fabry-Perot testing	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,990 \$950 \$1,075 \$0 \$0 \$2,025 \$0 \$3,708 \$0	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708	
APITAL EQUIPMENT  F-P Insertion Actuator (1) [Ultramotion HT23]  F-P Absolute Encoder (1)  TOTAL  AVEL  Observe Fabry-Perot testing	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,990 \$950 \$1,075 \$0 \$0 \$2,025 \$0 \$3,708 \$0	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708 \$0	
F-P Insertion Actuator (1) [Ultramotion HT23] F-P Absolute Encoder (1)  TOTAL  AVEL  Observe Fabry-Perot testing  Support RSS-VIS F-P Testing	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,990 \$950 \$1,075 \$0 \$0 \$2,025 \$0 \$3,708 \$0 \$0	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708 \$0 \$0	
APITAL EQUIPMENT F-P Insertion Actuator (1) [Ultramotion HT23] F-P Absolute Encoder (1)  TOTAL EAVEL Observe Fabry-Perot testing Support RSS-VIS F-P Testing  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,990 \$950 \$1,075 \$0 \$0 \$2,025 \$0 \$3,708 \$0	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708 \$0	
APITAL EQUIPMENT F-P Insertion Actuator (1) [Ultramotion HT23] F-P Absolute Encoder (1)  TOTAL  RAVEL Observe Fabry-Perot testing Support RSS-VIS F-P Testing  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,990 \$950 \$1,075 \$0 \$0 \$2,025 \$0 \$3,708 \$0 \$0 \$3,708	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708 \$0 \$0 \$0 \$0	
APITAL EQUIPMENT F-P Insertion Actuator (1) [Ultramotion HT23] F-P Absolute Encoder (1)  TOTAL  RAVEL Observe Fabry-Perot testing Support RSS-VIS F-P Testing  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$1,758 \$0 \$0 \$0 \$0	\$0 \$3,990 \$950 \$1,075 \$0 \$0 \$0 \$2,025 \$0 \$3,708 \$0 \$0 \$0 \$0	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708 \$0 \$0 \$0	
APITAL EQUIPMENT F-P Insertion Actuator (1) [Ultramotion HT23] F-P Absolute Encoder (1)  TOTAL RAVEL Observe Fabry-Perot testing Support RSS-VIS F-P Testing  TOTAL JBCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,990 \$1,075 \$0 \$0 \$0 \$2,025 \$0 \$3,708 \$0 \$3,708	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708 \$0 \$0 \$0	
APITAL EQUIPMENT F-P Insertion Actuator (1) [Ultramotion HT23] F-P Absolute Encoder (1)  TOTAL  RAVEL Observe Fabry-Perot testing Support RSS-VIS F-P Testing  TOTAL  JBCONTRACTS / SERVICES  Paradigm Design	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,990 \$1,075 \$0 \$0 \$0 \$2,025 \$0 \$3,708 \$0 \$3,708	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708 \$0 \$0 \$0 \$5,466	
APITAL EQUIPMENT F-P Insertion Actuator (1) [Ultramotion HT23] F-P Absolute Encoder (1)  TOTAL RAVEL Observe Fabry-Perot testing Support RSS-VIS F-P Testing  TOTAL JBCONTRACTS / SERVICES  Paradigm Design Bit7	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$1,758 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$3,990 \$1,075 \$0 \$0 \$0 \$2,025 \$0 \$3,708 \$0 \$3,708 \$0 \$0 \$3,708	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708 \$0 \$0 \$0 \$5,466	
APITAL EQUIPMENT F-P Insertion Actuator (1) [Ultramotion HT23] F-P Absolute Encoder (1)  TOTAL AVEL Observe Fabry-Perot testing Support RSS-VIS F-P Testing  TOTAL BECONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,990 \$1,075 \$0 \$0 \$0 \$2,025 \$0 \$3,708 \$0 \$3,708	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708 \$0 \$0 \$0 \$5,466	
APITAL EQUIPMENT  F-P Insertion Actuator (1) [Ultramotion HT23]  F-P Absolute Encoder (1)  TOTAL  RAVEL  Observe Fabry-Perot testing  Support RSS-VIS F-P Testing  TOTAL  JBCONTRACTS / SERVICES  Paradigm Design  Bit7  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,990 \$1,075 \$0 \$0 \$2,025 \$0 \$3,708 \$0 \$3,708 \$0 \$3,708 \$0 \$3,708	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708 \$0 \$0 \$5,466 \$0 \$30,000 \$8,025 \$38,025	
APITAL EQUIPMENT  F-P Insertion Actuator (1) [Ultramotion HT23]  F-P Absolute Encoder (1)  TOTAL  RAVEL  Observe Fabry-Perot testing Support RSS-VIS F-P Testing  TOTAL  JBCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL  TOTAL  TOTAL  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$1,758 \$0 \$0 \$1,758	\$0 \$3,990 \$1,075 \$0 \$0 \$0 \$2,025 \$0 \$3,708 \$0 \$3,708 \$0 \$3,708 \$0 \$3,708 \$0 \$2,025 \$0 \$2,025	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708 \$0 \$0 \$5,466 \$0 \$30,000 \$8,025 \$38,025	
APITAL EQUIPMENT F-P Insertion Actuator (1) [Ultramotion HT23] F-P Absolute Encoder (1)  TOTAL RAVEL Observe Fabry-Perot testing Support RSS-VIS F-P Testing  TOTAL JBCONTRACTS / SERVICES  Paradigm Design Bit7 TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,990 \$1,075 \$0 \$0 \$2,025 \$0 \$3,708 \$0 \$3,708 \$0 \$3,708 \$0 \$3,708	\$0 \$250 \$250 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$4,240 \$950 \$1,075 \$0 \$0 \$2,025 \$1,758 \$3,708 \$0 \$0 \$5,466 \$0 \$30,000 \$8,025 \$38,025	

	PY01	PY02	PY03	PY04	O/H RATE:	45.0
	2008-2009	2009-2010	2010-2011	2011 - 2012	TOTAL	Ave FTE
BOR	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR	0	Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.0
Project Scientist, Marsha Wolf	0	0	0	0	0	0.
Co-Investigator, Matt Bershady	0	0	0	0	0	0.
Co-Investigator, Amy Barger	0	0	0	0	0	0.
Sr. Scientist Advisor, Ken Nordsieck	0	-	0	0	0	0.
Project Manager, Mark Mulligan	0	0	0	0	0	0.
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0.
Systems Engineer, Don Thielman Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.
<u> </u>						
Lead Mechanical Engineer, Mike Smith	225	0	0	0	225	0
Electronics Technician	-	0	0	0	-	0
Opto-mechanical Engineer, Jeff Wong*	45	180	75	0	300	0
Software Programmer, Jeff Percival	0	0	0	0		0
Postdoc, Ryan Doering	0	0	0	0	0	0
Mechanical Engineer, Bill Mason	0	0	0	0	0	0
Designers*	0	100	0	0	100	0
Machinist	0	125	50	0	175	0
Instructor	0	0	0	0	0	0
Co-Investigator, Ted Williams	0	0	0	0	0	0
Controls Engineer, Ron Koch*	0	0	0	0	0	0
Graduate Students	0	0	0	0	0	0
Undergraduate Students	0	0	0	0	0	0
*Labor costs for these resources are presented in Subc	ontracts/Services.					
TOTAL HOURS:	270	405	125	0	800	0
TOTAL FTEs:	0.60	0.23	0.07	0.00	0.17	
SALARY	\$9,693	\$2,933	\$1,174	\$0	\$13,800	
FRINGE	\$3,733	\$1,453	\$582	\$0	\$5,768	
TOTAL LABOR	\$13,426	\$4,386	\$1,756	\$0	\$19,568	
TERIAL						
Material	\$0	\$750	\$0	\$0	\$750	
Frame	\$0	\$500	\$0	\$0	\$500	
		· ·				
Insertion mechanism, pneumatic (2)	\$0	\$1,000	\$0	\$0	\$1,000	
Insertion mechanism, pneumatic (2) Hall Sensors (3)	\$0 \$0	· ·				
1		\$1,000	\$0	\$0	\$1,000	
Hall Sensors (3)	\$0	\$1,000 \$45	\$0 \$0	\$0 \$0	\$1,000 \$45	
Hall Sensors (3) Miscellaneous	\$0 \$0	\$1,000 \$45 \$1,250	\$0 \$0 \$0	\$0 \$0 \$0	\$1,000 \$45 \$1,250	
Hall Sensors (3) Miscellaneous	\$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200	
Hall Sensors (3) Miscellaneous	\$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0	
Hall Sensors (3) Miscellaneous	\$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT	\$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT Polarizing beam splitter	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$0 \$4,745	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$4,745	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT Polarizing beam splitter	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$16,500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT Polarizing beam splitter	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$16,500 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$5,000	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$5,000 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT  Polarizing beam splitter  Coating	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$5,000 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT  Polarizing beam splitter  Coating  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$5,000 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT  Polarizing beam splitter  Coating	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$5,000 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT  Polarizing beam splitter  Coating  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$5,000 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT  Polarizing beam splitter  Coating  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$43,500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$5,000 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT  Polarizing beam splitter  Coating  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$43,500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$1,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT  Polarizing beam splitter  Coating  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$43,500 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT  Polarizing beam splitter  Coating  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$43,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL PITAL EQUIPMENT Polarizing beam splitter Coating  TOTAL AVEL  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$43,500 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT  Polarizing beam splitter  Coating  TOTAL  AVEL  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$43,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT  Polarizing beam splitter  Coating  TOTAL  AVEL  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$43,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL PITAL EQUIPMENT Polarizing beam splitter Coating  TOTAL AVEL  TOTAL BCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$43,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL PITAL EQUIPMENT Polarizing beam splitter Coating  TOTAL AVEL  TOTAL  PARACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$43,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL PITAL EQUIPMENT Polarizing beam splitter Coating  TOTAL AVEL  TOTAL BCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$4,745 \$55,000 \$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL PITAL EQUIPMENT Polarizing beam splitter Coating  TOTAL AVEL  TOTAL  PARACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$43,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT Polarizing beam splitter Coating  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$43,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL PITAL EQUIPMENT Polarizing beam splitter Coating  TOTAL  AVEL  TOTAL BCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL TOTAL DIRECT	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$0 \$43,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$4,745 \$55,000 \$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Hall Sensors (3) Miscellaneous Guide rails and bearings  TOTAL  PITAL EQUIPMENT Polarizing beam splitter Coating  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$0 \$4,745 \$16,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$38,500 \$5,000 \$0 \$0 \$43,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$1,000 \$45 \$1,250 \$1,200 \$0 \$0 \$0 \$4,745 \$55,000 \$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	

	PY01	PY02	PY03	PY04	O/H RATE:	45.0
	2008-2009	2009-2010	2010-2011	2011 - 2012	TOTAL	Ave FTE
BOR	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR		Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.
Project Scientist, Marsha Wolf	0	0	0	0	0	0.
Co-Investigator, Matt Bershady	0	0	0	0	0	0.
Co-Investigator, Amy Barger	0	0		0	0	0.
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.
Project Manager, Mark Mulligan	0	0	0	0	0	0.
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0.
Systems Engineer, Don Thielman	0	0	0	0	0	0
Electrical Engineer, Paul Sendelbach	75	600	250	0	925	
Lead Mechanical Engineer, Mike Smith Electronics Technician	0	000	0	0	925	0
	0	0	0	0	0	0
Opto-mechanical Engineer, Jeff Wong* Software Programmer, Jeff Percival	0	0	0	0	0	0
	0	0	0	0	0	0
Postdoc, Ryan Doering		-		0		
Mechanical Engineer, Bill Mason	105	420 250	175	0	700 250	0
Designers*						
Machinist Instructor	0	450	150	0	600	0
Instructor	0	0	0			0
Co-Investigator, Ted Williams	0	0	0	0	0	C
Controls Engineer, Ron Koch*	0	0	0	0	0	0
Graduate Students	0	0	0	0	0	0
Undergraduate Students	0	0	0	0	0	0
*Labor costs for these resources are presented in Subc						
TOTAL HOURS:	180	1,720	575	0	2,475	(
TOTAL FTEs:	0.40	0.96	0.32	0.00	0.52	
SALARY	\$8,820	\$58,762	\$23,604	\$0	\$91,186	
FRINGE	\$3,396	\$23,789	\$9,478	\$0	\$36,663	
TOTAL LABOR	\$12,216	\$82,551	\$33,082	\$0	\$127,849	
TERIAL						
Material & Misc H/W	\$0	\$1,800	\$1,200	\$0	\$3,000	
Gearbox, drive gear, precision bearings/rollers	\$0	\$4,000	\$0	\$0	\$4,000	
Pneumatic Lock, Articulation	\$0	\$500	\$0	\$0	\$500	
Camera Focus Linear Encoder (2)	\$0	\$1,500	\$0	\$0	\$1,500	
Limit Switches (5)	\$0	\$375	\$0	\$0	\$375	
Hall Sensors (6)	\$0	\$90	\$0	\$0	\$90	
Articulation Actuator (2) [Dynatec Sys BL2330]	\$0	\$2,200	\$0	\$0	\$2,200	
Articulation Position Encoder, Absolute (2)	\$0	\$2,500	\$0	\$0	\$2,500	
Solidworks & S/W PDM (WPS)	\$2,550	\$1,250	\$0	\$0	\$3,800	
TOTAL	\$2,550	\$14,215	\$1,200	\$0	\$17,965	
PITAL EQUIPMENT	. , ,			•	. ,	
Optical blanks & Witness Samples(7)	\$40,196	\$87,371	\$0	\$0	\$127,567	
Lens fabrication	\$0	\$77,000	\$0	\$0	\$77,000	
					ψ,σσσ	
Lens coating	0.2				\$28,000	
Lens coating Camera Focus Actuator (1) [Physic M. 235]	\$0 \$0	\$28,000	\$0	\$0	\$28,000 \$3,373	
Lens coating Camera Focus Actuator (1) [Physic M-235]	\$0	\$28,000 \$3,373	\$0 \$0	\$0 \$0	\$3,373	
Camera Focus Actuator (1) [Physic M-235]	\$0 \$0	\$28,000 \$3,373 \$0	\$0 \$0 \$0	\$0 \$0 \$0	\$3,373 \$0	
Camera Focus Actuator (1) [Physic M-235]	\$0	\$28,000 \$3,373	\$0 \$0	\$0 \$0	\$3,373	
Camera Focus Actuator (1) [Physic M-235]	\$0 \$0 \$40,196	\$28,000 \$3,373 \$0 \$195,744	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940	
Camera Focus Actuator (1) [Physic M-235]	\$0 \$0 \$40,196	\$28,000 \$3,373 \$0 \$195,744	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940	
Camera Focus Actuator (1) [Physic M-235]	\$0 \$0 \$40,196 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940 \$0 \$0	
Camera Focus Actuator (1) [Physic M-235]	\$0 \$0 \$40,196 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940 \$0 \$0 \$0	
Camera Focus Actuator (1) [Physic M-235]	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0	
Camera Focus Actuator (1) [Physic M-235]  TOTAL  AVEL	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0 \$0	
Camera Focus Actuator (1) [Physic M-235]  TOTAL  AVEL  TOTAL	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0	
Camera Focus Actuator (1) [Physic M-235]  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0 \$0 \$0	
Camera Focus Actuator (1) [Physic M-235]  TOTAL  AVEL  TOTAL	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0 \$0	
Camera Focus Actuator (1) [Physic M-235]  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Camera Focus Actuator (1) [Physic M-235]  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0 \$0 \$0 \$15,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Cryogenic Refracture Index Measurements, S-LA	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Cryogenic Refracture Index Measurements, S-LA  Paradigm Design	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Cryogenic Refracture Index Measurements, S-LA  Paradigm Design  Bit7	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$15,000 \$0 \$13,375	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0 \$0 \$15,000 \$0 \$0 \$13,375	
TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Cryogenic Refracture Index Measurements, S-LA  Paradigm Design Bit7	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$15,000 \$0 \$13,375	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0 \$0 \$15,000 \$0 \$0 \$13,375	
TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Cryogenic Refracture Index Measurements, S-LA  Paradigm Design  Bit7  TOTAL	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0 \$0 \$0 \$15,000 \$0 \$0 \$13,375 \$28,375	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0 \$0 \$0 \$15,000 \$0 \$0 \$13,375 \$28,375	
TOTAL  BECONTRACTS / SERVICES Cryogenic Refracture Index Measurements, S-LA  Paradigm Design Bit7 TOTAL  TOTAL  TOTAL  TOTAL	\$0 \$0 \$40,196 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$28,000 \$3,373 \$0 \$195,744 \$0 \$0 \$0 \$0 \$0 \$0 \$15,000 \$0 \$0 \$13,375 \$28,375	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$3,373 \$0 \$235,940 \$0 \$0 \$0 \$0 \$0 \$0 \$15,000 \$0 \$13,375 \$28,375	

	PY01	PY02	PY03	PY04	O/H RATE:	45.0
	2008-2009	2009-2010	2010-2011	2011 - 2012	TOTAL	Ave FTE
ABOR	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR	0	Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.
Project Scientist, Marsha Wolf	0	0	0	0	0	0.
Co-Investigator, Matt Bershady	0	0	0	0	0	0.
Co-Investigator, Amy Barger	0	0	0	0	0	0.
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.
Project Manager, Mark Mulligan	0	0	0	0	0	0.
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0.
Systems Engineer, Don Thielman  Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.
<u> </u>	75	600	250	0	925	0
Lead Mechanical Engineer, Mike Smith  Electronics Technician	0	20	100	0	120	0
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	0
Software Programmer, Jeff Percival	0	0	0	0	0	0
_	450	1,800	750	0	3,000	0
Postdoc, Ryan Doering		1,800		0	0	
Mechanical Engineer, Bill Mason	0	100	0	0	100	0
Designers*	0			0		
Machinist		600	0	0	600	0
Instructor Co. Investigator, Ted Williams	0	0				0
Co-Investigator, Ted Williams	0	0	0	0	0	C
Controls Engineer, Ron Koch*	0	0	0	0	0	0
Graduate Students	0	0	0	0	0	C
Undergraduate Students	0	0	0	0	0	С
*Labor costs for these resources are presened in Subc		0.400	1 100			
TOTAL HOURS:	525	3,120	1,100	0	4,745	(
TOTAL FTEs:	1.17	1.73	0.61	0.00	0.99	
0.11.071	0.47.070	200 007	000 445		0.455.050	
SALARY	\$17,870	\$99,067	\$38,115	\$0	\$155,052	
FRINGE	\$6,878	\$39,689	\$14,670	\$0	\$61,237	
TOTAL LABOR	\$24,748	\$138,756	\$52,785	\$0	\$216,289	
ATERIAL	40.000	0.0	00	0.0	00.000	
CPU Workstation	\$3,000	\$0	\$0	\$0	\$3,000	
Software and IDL licensing	\$2,000	\$0	\$0	\$0	\$2,000	
Material	\$0	\$1,000	\$0	\$0	\$1,000	
Filter wheel actuator [Phytron]	\$0	\$1,500	\$0	\$0	\$1,500	
Filter wheel encoder, absolute	\$0	\$1,250	\$0	\$0	\$1,250	
Cryrocooler Compessor & Fittings	\$0	\$11,500	\$0	\$0	\$11,500	
Hall Sensors & Misc	\$0	\$810	\$3,000	\$0	\$3,810	
Temperature sensors & controller	\$0	\$8,000	\$0	\$0	\$8,000	
Cabling	\$0	\$4,500	\$0	\$0	\$4,500	
TOTAL	\$5,000	\$28,560	\$3,000	\$0	\$36,560	
PITAL EQUIPMENT						
SG H2RG FPA	\$150,000	\$200,000	\$0	\$0	\$350,000	
SG H2RG FPA EG H2RG FPA	\$20,000	\$200,000 \$30,000	\$0 \$0	\$0 \$0	\$350,000 \$50,000	
	. ,				\$50,000 \$67,000	
EG H2RG FPA	\$20,000	\$30,000	\$0	\$0	\$50,000	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp	\$20,000 \$20,000	\$30,000 \$47,000	\$0 \$0	\$0 \$0	\$50,000 \$67,000	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux	\$20,000 \$20,000 \$6,400	\$30,000 \$47,000 \$18,600	\$0 \$0 \$0	\$0 \$0 \$0	\$50,000 \$67,000 \$25,000	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters TOTAL	\$20,000 \$20,000 \$6,400 \$0	\$30,000 \$47,000 \$18,600 \$20,000	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$50,000 \$67,000 \$25,000 \$20,000	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters TOTAL	\$20,000 \$20,000 \$6,400 \$0	\$30,000 \$47,000 \$18,600 \$20,000	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$50,000 \$67,000 \$25,000 \$20,000	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters TOTAL	\$20,000 \$20,000 \$6,400 \$0 \$196,400	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters TOTAL	\$20,000 \$20,000 \$6,400 \$0 \$196,400	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600	\$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters TOTAL	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$1,960 \$0	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters TOTAL	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0 \$0	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$1,960 \$0 \$0	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters TOTAL AVEL Steve Smee to Madison	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0 \$0	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$1,960 \$0 \$0 \$0	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters TOTAL AVEL Steve Smee to Madison	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0 \$0	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$1,960 \$0 \$0	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters TOTAL AVEL Steve Smee to Madison TOTAL BECONTRACTS / SERVICES	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0 \$0 \$0 \$0	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0 \$0 \$0 \$980	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$1,960 \$0 \$0 \$0 \$1,960	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters TOTAL AVEL Steve Smee to Madison  TOTAL BECONTRACTS / SERVICES Detector training	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0 \$0 \$0 \$0	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0 \$0 \$0 \$980	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$1,960 \$0 \$0 \$0 \$1,960	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters  TOTAL  RAVEL  Steve Smee to Madison  TOTAL  JBCONTRACTS / SERVICES  Detector training Dr. Stephen Smee	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0 \$0 \$980	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0 \$0 \$980 \$28,000 \$58,800	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$1,960 \$0 \$0 \$0 \$1,960 \$1,960	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters  TOTAL AVEL Steve Smee to Madison  TOTAL BCONTRACTS / SERVICES Detector training Dr. Stephen Smee Paradigm Design	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0 \$0 \$980 \$980	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0 \$0 \$980 \$28,000 \$58,800 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$1,960 \$0 \$0 \$1,960 \$28,000 \$88,700 \$0	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters  TOTAL  RAVEL Steve Smee to Madison  TOTAL  JBCONTRACTS / SERVICES  Detector training Dr. Stephen Smee Paradigm Design Bit7	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0 \$0 \$980 \$980 \$980	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0 \$0 \$980 \$28,000 \$58,800 \$0 \$53,350	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$1,960 \$0 \$0 \$1,960 \$28,000 \$88,700 \$0 \$5,350	
Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters  TOTAL  AVEL Steve Smee to Madison  TOTAL  BECONTRACTS / SERVICES  Detector training Dr. Stephen Smee Paradigm Design	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0 \$0 \$980 \$980	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0 \$0 \$980 \$28,000 \$58,800 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$1,960 \$0 \$0 \$1,960 \$28,000 \$88,700 \$0	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters  TOTAL  AVEL Steve Smee to Madison  TOTAL  BECONTRACTS / SERVICES  Detector training Dr. Stephen Smee Paradigm Design Bit7  TOTAL	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0 \$0 \$980 \$0 \$980 \$0 \$980	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0 \$0 \$0 \$980 \$28,000 \$58,800 \$0 \$5,350 \$92,150	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$512,000 \$0 \$0 \$0 \$1,960 \$28,000 \$88,700 \$0 \$1,2050	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters  TOTAL  RAVEL Steve Smee to Madison  TOTAL  JBCONTRACTS / SERVICES  Detector training Dr. Stephen Smee Paradigm Design Bit7  TOTAL  TOTAL  TOTAL	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0 \$0 \$980 \$0 \$980 \$0 \$980 \$0 \$980 \$0 \$9,300 \$0 \$9,300 \$0 \$9,300	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0 \$0 \$0 \$980 \$28,000 \$58,800 \$0 \$575,350	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$512,000 \$1,960 \$0 \$0 \$1,960 \$28,000 \$88,700 \$0 \$1,2050	
EG H2RG FPA Sidecar - Bare Mux, Cryo & Room Temp Bare Mux Filters  TOTAL  RAVEL Steve Smee to Madison  TOTAL  JBCONTRACTS / SERVICES  Detector training Dr. Stephen Smee Paradigm Design Bit7  TOTAL	\$20,000 \$20,000 \$6,400 \$0 \$196,400 \$980 \$0 \$0 \$0 \$980 \$0 \$980 \$0 \$980	\$30,000 \$47,000 \$18,600 \$20,000 \$315,600 \$980 \$0 \$0 \$0 \$980 \$28,000 \$58,800 \$0 \$5,350 \$92,150	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$50,000 \$67,000 \$25,000 \$20,000 \$512,000 \$512,000 \$0 \$0 \$0 \$1,960 \$28,000 \$88,700 \$0 \$1,2050	

0 PREDEWAR SUBASSEMBLY	PY01	PY02	PY03	PY04	O/H RATE:	45.0
	2008-2009	2009-2010	2010-2011	2011 - 2012	TOTAL	Ave FTE
ABOR	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR		Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.
Project Scientist, Marsha Wolf	0	0	0	0	0	0.
Co-Investigator, Matt Bershady	0	0	0	0	0	0
Co-Investigator, Amy Barger	0	0	0	0	0	0
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0
Project Manager, Mark Mulligan	0	0	0	0	0	0
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0
Systems Engineer, Don Thielman	0		0	0	0	0
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0
Lead Mechanical Engineer, Mike Smith	45	180	75	0	300	0
Electronics Technician	0	35	175	0	210	0
Opto-mechanical Engineer, Jeff Wong*	15	60	25	0	100	(
Software Programmer, Jeff Percival	0	0	0	0	0	(
Postdoc, Ryan Doering	0	0	0	0	0	C
Mechanical Engineer, Bill Mason	105	420	175	0	700	C
Designers*	105	420	175	0	700	C
Machinist	0	0	200	0	200	C
Instructor	0	0	0	0	0	(
Co-Investigator, Ted Williams	0	0	0	0	0	(
Controls Engineer, Ron Koch*	0	0	0	0	0	(
Graduate Students	0	0	0	0	0	(
Undergraduate Students	270	990	480	0	1,740	C
*Labor costs for these resources are presened in Subc	ontracts/Services.					
TOTAL HOURS:	540	2,105	1,305	0	3,950	(
TOTAL FTEs:	1.20	1.17	0.73	0.00	0.82	
SALARY	\$10,136	\$40,705	\$27,030	\$0	\$77,871	
FRINGE	\$2,990	\$12,326	\$9,301	\$0	\$24,617	
TOTAL LABOR	\$13,126	\$53,031	\$36,331	\$0	\$102,488	
ATERIAL						
Materials - thermal insulating	\$0	\$3,000	\$0	\$0	\$3,000	
Materials - structural	\$0	\$1,000	\$0	\$0	\$1,000	
Enclosure thermal control (heaters, controller, wiri	\$0	\$3,000	\$0	\$0	\$3,000	
Baffling coatings - paint	\$0	\$1,000	\$0	\$0	\$1,000	
Pneumatics (3) & Misc. H/W	\$0	\$3,500	\$3,000	\$0	\$6,500	
Thermocouples & Hall Sensors (6)	\$0	\$1,090	\$0	\$0	\$1,090	
SolidWorks Licenses - Renewals (DPA/ARR)	\$540	\$750	\$0	\$0	\$1,290	
PDM Licenses - Renewals (ARR)	\$2,300	\$500	\$0	\$0	\$2,800	
CAD CPU & Monitor	\$3,000	\$3,000	\$0	\$0	\$6,000	
TOTAL	\$5,840	\$16,840	\$3,000	\$0	\$25,680	
PITAL EQUIPMENT	ψο,ο το	<b>\$10,010</b>	ψ0,000	Ψ	<b>\$20,000</b>	
Baffling coating - plating	\$0	\$5,000	\$0	\$0	\$5,000	
Chiller - FTS ULT Series RC210	\$0	\$32,000	\$0	\$0	\$32,000	
Chiller plumbing	\$0	\$7,500	\$0	\$0	\$7,500	
Crimier planibing	\$0	\$0	\$0	\$0	\$0	
TOTAL	\$0	\$0	\$0	\$0	\$0	
TOTAL	\$0	\$44,500	\$0	\$0	\$44,500	
AVEL						
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
			\$0	\$0	\$0	
TOTAL	\$0	\$0				
	\$5,000	\$0 \$25,000	\$0	\$0	\$30,000	
BCONTRACTS / SERVICES	\$5,000 \$0			\$0	\$0	
BCONTRACTS / SERVICES	\$5,000	\$25,000	\$0			
BCONTRACTS / SERVICES Thermal Analyst	\$5,000 \$0	\$25,000 \$0	\$0 \$0	\$0	\$0	
BCONTRACTS / SERVICES Thermal Analyst Paradigm Design	\$5,000 \$0 \$1,125	\$25,000 \$0 \$4,500	\$0 \$0 \$1,875	\$0 \$0	\$0 \$7,500	
BCONTRACTS / SERVICES Thermal Analyst Paradigm Design Bit7	\$5,000 \$0 \$1,125 \$5,618	\$25,000 \$0 \$4,500 \$22,470	\$0 \$0 \$1,875 \$9,363	\$0 \$0 \$0	\$0 \$7,500 \$37,450	
BECONTRACTS / SERVICES Thermal Analyst  Paradigm Design Bit7 TOTAL	\$5,000 \$0 \$1,125 \$5,618 \$11,743	\$25,000 \$0 \$4,500 \$22,470 \$51,970	\$0 \$0 \$1,875 \$9,363 \$11,238	\$0 \$0 \$0 \$0	\$0 \$7,500 \$37,450 \$74,950	
BECONTRACTS / SERVICES Thermal Analyst  Paradigm Design Bit7  TOTAL  TOTAL DIRECT	\$5,000 \$0 \$1,125 \$5,618 \$11,743	\$25,000 \$0 \$4,500 \$22,470 \$51,970 \$166,341	\$0 \$0 \$1,875 \$9,363 \$11,238	\$0 \$0 \$0 \$0	\$0 \$7,500 \$37,450 \$74,950	
JBCONTRACTS / SERVICES Thermal Analyst  Paradigm Design  Bit7  TOTAL	\$5,000 \$0 \$1,125 \$5,618 \$11,743	\$25,000 \$0 \$4,500 \$22,470 \$51,970	\$0 \$0 \$1,875 \$9,363 \$11,238	\$0 \$0 \$0 \$0	\$0 \$7,500 \$37,450 \$74,950	

VIRONMENTAL CONTROL	PY01	PY02	PY03	PY04	O/H RATE:	45.0
	2008-2009	2009-2010	2010-2011	2011 - 2012	TOTAL	Ave FTE
BOR	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR	0	Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.
Project Scientist, Marsha Wolf	0	0	0	0	0	0
Co-Investigator, Matt Bershady	0	0	0	0	0	0
Co-Investigator, Amy Barger	0	0	0	0	0	0
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0
Project Manager, Mark Mulligan	0	0	0	0	0	0
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0
Systems Engineer, Don Thielman	0	0	0	0	0	0
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0
Lead Mechanical Engineer, Mike Smith	0	0	0	0	0	0
Electronics Technician	0	0	0	0	0	0
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	0
Software Programmer, Jeff Percival	0	0	0	0	0	0
Postdoc, Ryan Doering	0	0	0	0	0	0
Mechanical Engineer, Bill Mason	75	300	125	0	500	O
Designers*	0	0	0	0	0	O
Machinist	0	75	75	0	150	0
Instructor	0	0	0	0	0	0
Co-Investigator, Ted Wiliams	0	0	0	0	0	C
Controls Engineer, Ron Koch*	0	0	0	0	0	C
Graduate Students	0	0	0	0	0	0
Undergraduate Students	0	0	0	0	0	0
*Labor costs for these resources are presened in Subc	-	0	U	0	O .	
TOTAL HOURS:	75	375	200	0	650	C
						·
TOTAL FTEs:	0.17	0.21	0.11	0.00	0.14	
041.45	<b>#0.000</b>	047 700	00.444	••	000 405	
SALARY	\$3,992	\$17,729	\$8,414	\$0	\$30,135	
FRINGE	\$1,537	\$7,019	\$3,432	\$0	\$11,988	
TOTAL LABOR	\$5,529	\$24,748	\$11,846	\$0	\$42,123	
TERIAL						
Sensors	\$0	\$1,500	\$0	\$0	\$1,500	
Circulation fans	\$0	\$750	\$0	\$0	\$750	
Air lines & fitting hardware	\$0	\$1,500	\$0	\$0	\$1,500	
Miscellaneous.						
	\$500	\$750	\$250	\$0	\$1,500	
Gold coat trial runs	\$500 \$5,000	\$750 \$0	\$250 \$0	\$0 \$0	\$1,500 \$5,000	
Gold coat trial runs						
Gold coat trial runs	\$5,000	\$0	\$0	\$0	\$5,000	
Gold coat trial runs	\$5,000 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$5,000 \$0	
Gold coat trial runs	\$5,000 \$0 \$0	\$0 \$0 \$0	\$0 \$0 \$0	\$0 \$0 \$0	\$5,000 \$0 \$0	
Gold coat trial runs  TOTAL	\$5,000 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$5,000 \$0 \$0 \$0	
TOTAL	\$5,000 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$5,000 \$0 \$0 \$0	
TOTAL PITAL EQUIPMENT	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$250	\$0 \$0 \$0 \$0 \$0 \$0	\$5,000 \$0 \$0 \$0 \$0 \$10,250	
TOTAL PITAL EQUIPMENT Gold coatings	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500	\$0 \$0 \$0 \$0 \$0 \$0 \$250	\$0 \$0 \$0 \$0 \$0 \$0	\$5,000 \$0 \$0 \$0 \$0 \$10,250	
TOTAL PITAL EQUIPMENT Gold coatings	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500	\$0 \$0 \$0 \$0 \$0 \$0 \$250 \$250	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000	
TOTAL PITAL EQUIPMENT Gold coatings	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$250 \$250 \$2,000 \$8,000 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000 \$0	
TOTAL PITAL EQUIPMENT Gold coatings	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$250 \$250 \$2,000 \$8,000 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$250 \$250 \$2,000 \$8,000 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$250 \$250 \$2,000 \$8,000 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$250 \$250 \$20,000 \$8,000 \$0 \$0 \$28,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000 \$0 \$0 \$28,000	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$250 \$250 \$20,000 \$8,000 \$0 \$0 \$28,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000 \$0 \$0 \$28,000	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$250 \$20,000 \$8,000 \$0 \$0 \$28,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000 \$0 \$0 \$0 \$28,000	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$20,000 \$8,000 \$0 \$0 \$28,000 \$0 \$28,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000 \$0 \$0 \$28,000	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$20,000 \$8,000 \$0 \$0 \$28,000 \$28,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000 \$0 \$0 \$28,000	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL  AVEL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$20,000 \$8,000 \$0 \$0 \$28,000 \$0 \$28,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000 \$0 \$0 \$28,000	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$20,000 \$8,000 \$0 \$0 \$28,000 \$28,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000 \$0 \$0 \$28,000	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL  AVEL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$20,000 \$8,000 \$0 \$0 \$28,000 \$0 \$28,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$10,250 \$20,000 \$8,000 \$0 \$0 \$28,000	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL  AVEL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$20,000 \$8,000 \$0 \$0 \$28,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$10,250  \$20,000 \$8,000 \$0 \$0 \$0 \$28,000 \$0 \$28,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL  AVEL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$20,000 \$8,000 \$0 \$0 \$0 \$28,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$0 \$10,250  \$20,000 \$8,000 \$0 \$0 \$0 \$0 \$0 \$28,000	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$250 \$20,000 \$8,000 \$0 \$0 \$0 \$28,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$0 \$10,250  \$20,000 \$8,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$20,000 \$8,000 \$0 \$0 \$28,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$0 \$10,250  \$20,000 \$8,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design  Bit7	\$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$5,500 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$1,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$250 \$250 \$20,000 \$8,000 \$0 \$0 \$0 \$28,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$0 \$10,250  \$20,000 \$8,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL  AVEL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$20,000 \$8,000 \$0 \$0 \$28,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$0 \$10,250  \$20,000 \$8,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$20,000 \$8,000 \$0 \$0 \$28,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$10,250  \$20,000 \$8,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design  Bit7  TOTAL  TOTAL  TOTAL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$20,000 \$8,000 \$0 \$0 \$0 \$28,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$10,250  \$20,000 \$8,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Gold coatings  Material (high thermal conductivity composite)  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL	\$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$5,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$4,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$20,000 \$8,000 \$0 \$0 \$28,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$5,000 \$0 \$0 \$0 \$0 \$0 \$0 \$10,250  \$20,000 \$8,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	

	PY01	PY02	PY03	PY04	O/H RATE:	45.0
200	2008-2009	2009-2010	2010-2011	2011 - 2012	TOTAL	Ave FTE
BOR	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR		Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.0
Project Scientist, Marsha Wolf	0	0	0	0	0	0.0
Co-Investigator, Matt Bershady	0	0	0	0	0	0.0
Co-Investigator, Amy Barger	-	0	-	0	0	0.0
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.0
Project Manager, Mark Mulligan	0	0	0	0	0	0.0
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0.
Systems Engineer, Don Thielman Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.
	0	0	0	0	0	
Lead Mechanical Engineer, Mike Smith Electronics Technician	0	500	250	0	750	0.
	0	0	0	0	0	0.
Opto-mechanical Engineer, Jeff Wong* Software Programmer, Jeff Percival	225	900	375	0	1,500	0.
-	0	900	0	0	1,500	0.
Postdoc, Ryan Doering	-	0	0	0	0	
Mechanical Engineer, Bill Mason	0	225	0	0	225	0
Designers*			-			
Machinist	0	0	225	0	225	0
Instructor	0	0	0	0	0	0
Co-Investigator, Ted Williams	0	0	0	0	0	0
Controls Engineer, Ron Koch*	225	900	375	0	1,500	0
Graduate Students	0	0	0	0	0	0
Undergraduate Students	0	0	0	0	0	0
*Labor costs for these resources are presened in Subo						
TOTAL HOURS:	450	2,525	1,225	0	4,200	0
TOTAL FTEs:	1.00	1.40	0.68	0.00	0.88	
SALARY	\$12,382	\$64,252	\$33,278	\$0	\$109,912	
FRINGE	\$4,766	\$24,732	\$13,394	\$0	\$42,892	
TOTAL LABOR	\$17,148	\$88,984	\$46,672	\$0	\$152,804	
TERIAL						
Enclosure material	\$0	\$500	\$0	\$0	\$500	
Additional sensors	\$0	\$1,200	\$0	\$0	\$1,200	
Cabling	\$0	\$5,000	\$1,000	\$0	\$6,000	
Labview Software Licensing	\$1,200	\$1,200	\$0	\$0	\$2,400	
PC Boards	\$0	\$7,500	\$0	\$0	\$7,500	
Miscellaneous	\$0	\$11,500	\$2,500	\$0	\$14,000	
Computer Hardware	\$3,000		ΨΞ,000		, ,	
Oomputer Hardware	\$3,000	\$3,000	\$0	\$0	\$6,000	
Computer Hardward	\$3,000	\$3,000 \$0		\$0 \$0		
Computer Hardware			\$0		\$6,000	
TOTAL	\$0	\$0	\$0 \$0	\$0	\$6,000 \$0	
TOTAL	\$0 \$0	\$0 \$0	\$0 \$0 \$0	\$0 \$0	\$6,000 \$0 \$0	
TOTAL PITAL EQUIPMENT	\$0 \$0	\$0 \$0	\$0 \$0 \$0	\$0 \$0	\$6,000 \$0 \$0	
TOTAL PITAL EQUIPMENT Motor Controller & Motion Control Boards	\$0 \$0 \$4,200	\$0 \$0 \$29,900	\$0 \$0 \$0 \$3,500	\$0 \$0 \$0	\$6,000 \$0 \$0 \$37,600	
TOTAL PITAL EQUIPMENT Motor Controller & Motion Control Boards	\$0 \$0 \$4,200	\$0 \$0 \$29,900 \$19,500	\$0 \$0 \$0 \$3,500	\$0 \$0 \$0	\$6,000 \$0 \$0 \$37,600	
TOTAL PITAL EQUIPMENT Motor Controller & Motion Control Boards	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0	\$0 \$0 \$29,900 \$19,500 \$7,500	\$0 \$0 \$0 \$3,500 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500	
TOTAL PITAL EQUIPMENT Motor Controller & Motion Control Boards	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0	\$0 \$0 \$0 \$3,500 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0	\$0 \$0 \$0 \$3,500 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware  TOTAL	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0	\$0 \$0 \$0 \$3,500 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware  TOTAL	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$0 \$27,000	\$0 \$0 \$0 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware  TOTAL	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000	\$0 \$0 \$0 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware  TOTAL	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000	\$0 \$0 \$0 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware  TOTAL	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000	\$0 \$0 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware  TOTAL	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0	\$0 \$0 \$3,500 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware  TOTAL  AVEL	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware  TOTAL  AVEL  TOTAL	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0	\$0 \$0 \$3,500 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware  TOTAL  AVEL	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$3,500 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL PITAL EQUIPMENT  Motor Controller & Motion Control Boards DAQ and I/O hardware  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Diron Technologies	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$3,500 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Diron Technologies  Paradigm Design	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$3,500 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL PITAL EQUIPMENT  Motor Controller & Motion Control Boards DAQ and I/O hardware  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Diron Technologies Paradigm Design Bit7	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$12,038	\$0 \$0 \$3,500 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$135,000 \$0 \$12,038	
TOTAL  PITAL EQUIPMENT  Motor Controller & Motion Control Boards  DAQ and I/O hardware  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Diron Technologies  Paradigm Design	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$3,500 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
TOTAL PITAL EQUIPMENT Motor Controller & Motion Control Boards DAQ and I/O hardware  TOTAL AVEL  TOTAL BCONTRACTS / SERVICES  Diron Technologies Paradigm Design Bit7  TOTAL	\$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
TOTAL PITAL EQUIPMENT Motor Controller & Motion Control Boards DAQ and I/O hardware  TOTAL AVEL  TOTAL BCONTRACTS / SERVICES  Diron Technologies Paradigm Design Bit7  TOTAL TOTAL DIRECT	\$0 \$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$12,038	\$0 \$0 \$3,500 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$135,000 \$0 \$12,038	
TOTAL PITAL EQUIPMENT Motor Controller & Motion Control Boards DAQ and I/O hardware  TOTAL AVEL  TOTAL BCONTRACTS / SERVICES  Diron Technologies Paradigm Design Bit7  TOTAL	\$0 \$4,200 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$29,900 \$19,500 \$7,500 \$0 \$0 \$27,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$3,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$6,000 \$0 \$0 \$37,600 \$19,500 \$7,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	

0 POWER DISTRIBUTION	PY01	PY02	PY03	PY04	O/H RATE:	45.0
200	2008-2009	2009-2010	2010-2011	2011 - 2012	TOTAL	Ave FTE
BOR	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR		Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.
Project Scientist, Marsha Wolf	0	0	0	0	0	0.
Co-Investigator, Matt Bershady	0	0	0	0	0	0.
Co-Investigator, Amy Barger	0	0	0	0	0	0
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0
Project Manager, Mark Mulligan	0	0	0	0	0	0
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0
Systems Engineer, Don Thielman	0	0	0	0	0	0
Electrical Engineer, Paul Sendelbach	60	360	150	0	570	0
Lead Mechanical Engineer, Mike Smith	0	0	0	0	0	0
Electronics Technician	0	160	200	0	360	0
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	C
Software Programmer, Jeff Percival	0	0	0	0	0	0
Postdoc, Ryan Doering	0	0	0	0	0	0
	0	0	0	0	0	
Mechanical Engineer, Bill Mason		-	-		-	0
Designers*	0	120	0	0	120	0
Machinist	0	0	150	0	150	0
Instructor	0	0	0	0	0	0
Co-Investigator, Ted Wiliams	0	0	0	0	0	0
Controls Engineer, Ron Koch*	0	0	0	0	0	C
Graduate Students	0	0	0	0	0	0
Undergraduate Students	0	0	0	0	0	0
*Labor costs for these resources are presened in Subd	contracts/Services.	1	Į.			
TOTAL HOURS:	60	640	500	0	1,200	0
TOTAL FTEs:	0.13	0.36	0.28	0.00	0.25	
TOTAL TIES.	0.10	0.00	0.20	0.00	0.20	
SALARY	\$5,400	¢27 112	\$22,911	\$0	\$65,423	
_	. ,	\$37,112	. ,			
FRINGE	\$0	\$1,814	\$4,011	\$0	\$5,825	
TOTAL LABOR	\$5,400	\$38,926	\$26,922	\$0	\$71,248	
TERIAL						
Power Supplies	\$0	\$7,500	\$0	\$0	\$7,500	
Power Supplies PC Boards	\$0	\$7,500 \$7,500	\$0 \$0	\$0	\$7,500 \$7,500	
PC Boards	\$0	\$7,500	\$0	\$0	\$7,500	
PC Boards Cabling	\$0 \$0	\$7,500 \$5,000	\$0 \$0	\$0 \$0	\$7,500 \$5,000	
PC Boards Cabling Material	\$0 \$0 \$0	\$7,500 \$5,000 \$500	\$0 \$0 \$0	\$0 \$0 \$0	\$7,500 \$5,000 \$500	
PC Boards Cabling Material Heat sinks	\$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$4,000	\$0 \$0 \$0 \$0 \$0 \$4,000	\$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$8,000	
PC Boards Cabling Material Heat sinks	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$4,000	\$0 \$0 \$0 \$0 \$0 \$4,000	\$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$8,000	
PC Boards Cabling Material Heat sinks	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$4,000 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$500 \$8,000 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$4,000 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$500 \$8,000 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0 \$0 \$25,000	\$0 \$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$0 \$29,000	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0 \$0 \$25,000	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$0 \$29,000	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0 \$0 \$0 \$25,000	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$0 \$29,000	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0 \$0 \$25,000	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$0 \$29,000	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0 \$0 \$0 \$25,000	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$0 \$29,000	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0 \$0 \$0 \$25,000	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$0 \$29,000	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$4,000 \$0 \$4,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$29,000 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$25,000	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$500 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$25,000	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$8,000 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$5,000 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$500 \$500 \$8,000 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$5,000 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL PITAL EQUIPMENT  TOTAL AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$5,000 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$5,000 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$5,000 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$5,000 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$5,000 \$5,000 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$5,000 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$5,000 \$5,000 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL  TOTAL  TOTAL  TOTAL  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PC Boards Cabling Material Heat sinks Miscellaneous Hardware  TOTAL  PITAL EQUIPMENT  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$500 \$4,000 \$0 \$0 \$0 \$25,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$4,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$7,500 \$5,000 \$5,000 \$5,000 \$5,000 \$8,000 \$0 \$0 \$0 \$29,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	

I	PY01	PY02	PY03	PY04	O/H RATE:	45.0°
ABOR	2008-2009	2009-2010	2010-2011	2011 - 2012	TOTAL	Ave FTE
	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR	0	Project Life
Principal Investigator, Andrew Sheinis	0	0	0	0	0	0.0
Project Scientist, Marsha Wolf	0	0	0	0	0	0.0
Co-Investigator, Matt Bershady	0	0	0	0	0	0.0
Co-Investigator, Amy Barger	0	0	0	0	0	0.0
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.0
Project Manager, Mark Mulligan  Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0.0
Systems Engineer, Don Thielman	0	0	0	0	0	0.0
Electrical Engineer, Paul Sendelbach	0	80	50	0	130	0.0
-	0	300	125	0	425	0.0
Lead Mechanical Engineer, Mike Smith Electronics Technician	0	10	50	0	60	0.
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	0.
Software Programmer, Jeff Percival	0	0	0	0	0	0.
Postdoc, Ryan Doering	0	0	0	0	0	0.0
Mechanical Engineer, Bill Mason	0	0	0	0	0	0.0
Designers*	0	100	50	0	150	0.
Machinist	0	100	250	0	350	0.0
Instructor	0	0	0	0	0	0.
Co-Investigator, Ted Williams	0	0	0	0	0	0.
Controls Engineer, Ron Koch*	0	0	0	0	0	0.
Graduate Students	0	0	0	0	0	0.
Undergraduate Students	0	500	250	0	750	0.
*Labor costs for these resources are presened in Subo	- 1	300	230	0	730	0.
TOTAL HOURS:	0	1,090	775	0	1,865	0.
TOTAL FIES:	0.00	0.61	0.43	0.00	0.39	0.
TOTAL TIES.	0.00	0.01	0.40	0.00	0.00	
SALARY	\$0	\$27,595	\$19,640	\$0	\$47,235	
FRINGE	\$0	\$6,422	\$5,630	\$0	\$12,052	
TOTAL LABOR	\$0	\$34,017	\$25,270	\$0	\$59,287	
ATERIAL	Ψ0	ψο 1,σ 11	Ψ20,270	Ψ0	ψου,207	
Material	\$0	\$1,500	\$3,500	\$0	\$5,000	
Testing Computer support hardware	\$0	\$5,000	\$0	\$0	\$5,000	
Software and licensing	\$0	\$3,000	\$0	\$0	\$3,000	
ŭ	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0					
· · · · · · · · · · · · · · · · · · ·		\$0	\$0	\$0		
		\$0 \$0	\$0 \$0	\$0 \$0	\$0	
TOTAL	\$0	\$0	\$0	\$0	\$0 \$0	
TOTAL PITAL EQUIPMENT					\$0	
PITAL EQUIPMENT	\$0 \$0	\$0 \$9,500	\$0 \$3,500	\$0 \$0	\$0 \$0 \$13,000	
PITAL EQUIPMENT Test setup optics & lamps	\$0 \$0 \$0	\$9,500 \$9,500	\$3,500 \$10,000	\$0 \$0	\$0 \$0 \$13,000	
PITAL EQUIPMENT  Test setup optics & lamps  Throughput test equipment	\$0 \$0 \$0 \$0	\$0 \$9,500 \$0 \$0	\$0 \$3,500 \$10,000 \$10,000	\$0 \$0 \$0 \$0	\$0 \$0 \$13,000 \$10,000 \$10,000	
PITAL EQUIPMENT Test setup optics & lamps	\$0 \$0 \$0 \$0 \$0 \$0	\$0 \$9,500 \$0 \$0	\$0 \$3,500 \$10,000 \$10,000 \$30,000	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,000 \$10,000 \$10,000 \$30,000	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$9,500 \$0 \$0 \$0 \$0	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0	\$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,000 \$10,000 \$10,000 \$30,000 \$0	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,000 \$10,000 \$10,000 \$30,000 \$0 \$0	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$9,500 \$0 \$0 \$0 \$0	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0	\$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,000 \$10,000 \$10,000 \$30,000 \$0	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,000 \$10,000 \$30,000 \$0 \$0 \$50,000	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$13,000 \$10,000 \$30,000 \$0 \$0 \$50,000	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$13,000 \$10,000 \$30,000 \$0 \$0 \$50,000	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$13,000 \$10,000 \$30,000 \$0 \$0 \$50,000	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$13,000 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$13,000 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$13,000 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000	
PITAL EQUIPMENT  Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$13,000 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0	
PITAL EQUIPMENT  Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$13,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$13,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$13,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$13,000 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$13,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$13,000 \$10,000 \$10,000 \$30,000 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
PITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL  AVEL  TOTAL  BCONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL  TOTAL  TOTAL  TOTAL  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$13,000 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$10,000 \$30,000 \$10,0	
APITAL EQUIPMENT Test setup optics & lamps Throughput test equipment Other test equipment  TOTAL AVEL  TOTAL BECONTRACTS / SERVICES  Paradigm Design Bit7  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$9,500 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$3,500 \$10,000 \$10,000 \$30,000 \$0 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$13,000 \$10,000 \$10,000 \$30,000 \$0 \$50,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	

4.0 INTEGRATION, VERIFICATION, AND ESTING	PY01 2008-2009	PY02 2009-2010	PY03 2010-2011	PY04 2011 - 2012	O/H RATE:	45.0 Ave FTE
ABOR					TOTAL	
	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR	0	Project Life
Principal Investigator, Andrew Sheinis	0	0	1,050	0	1,050	0.
Project Scientist, Marsha Wolf	0	0		0	0	
Co-Investigator, Matt Bershady			0	-		0.
Co-Investigator, Amy Barger	0	0	0	0	0	0.
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.
Project Manager, Mark Mulligan	0	0	0	0	0	0.
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0.
Systems Engineer, Don Thielman	0	0	0	0	0	0.
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.
Lead Mechanical Engineer, Mike Smith	0	0	1,050	0	1,050	0
Electronics Technician	0	0	105	0	105	0.
Opto-mechanical Engineer, Jeff Wong*	0	0	280	0	280	0
Software Programmer, Jeff Percival	0	0	770	0	770	0.
Postdoc, Ryan Doering	0	0	1,050	0	1,050	0
Mechanical Engineer, Bill Mason	0	0	525	0	525	0
Designers*	0	0	0	0	0	0
Machinist	0	0	0	0	0	0.
Instructor	0	0	0	0	0	0
Co-Investigator, Ted Wiliams	0	0	75	0	75	0.
Controls Engineer, Ron Koch*	0	0	350	0	350	0
Graduate Students	0	0	1,050	0	1,050	0
Undergraduate Students	0	0	0	0	0	0.
ū	-	U	U	U <sub> </sub>	U	0
*Labor costs for these resources are presented in Subc		0	0.005	0	0.005	4
TOTAL HOURS:	0	0	6,305	0	6,305	1
TOTAL FTEs:	0.00	0.00	3.50	0.00	1.31	
SALARY	\$0	\$0	\$221,076	\$0	\$221,076	
FRINGE	\$0	\$0	\$81,025	\$0	\$81,025	
TOTAL LABOR	\$0				0000 101	
TO THE EADOR	ΨΟ	\$0	\$302,101	\$0	\$302,101	
	ΨΟ	\$0	\$302,101	\$0	\$302,101	
	\$0	\$0	\$302,101	\$0 \$0	\$302,101	
ATERIAL	•					
ATERIAL Miscellaneous Expenses	\$0	\$0	\$10,000	\$0	\$10,000	
ATERIAL Miscellaneous Expenses Labview Software License	\$0 \$0	\$0 \$0	\$10,000 \$1,200	\$0 \$0	\$10,000 \$1,200	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000	\$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000	\$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals	\$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$0 \$17,700	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$17,700	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$0 \$17,700	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$17,700	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL  PITAL EQUIPMENT  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL  PITAL EQUIPMENT  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$17,700	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL  PITAL EQUIPMENT  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$17,700	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$17,700	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL  PITAL EQUIPMENT  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$17,700	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$17,700	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL  APITAL EQUIPMENT  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$17,700	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$17,700	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL  PITAL EQUIPMENT  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  PDM Licenses - Renewals  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  PTOTAL  PITAL EQUIPMENT  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL  APITAL EQUIPMENT  TOTAL  LAVEL  TOTAL  TOTAL  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL  APITAL EQUIPMENT  TOTAL  AVEL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL  APITAL EQUIPMENT  TOTAL  AVEL  TOTAL  BECONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
ATERIAL  Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL  APITAL EQUIPMENT  TOTAL  AVEL  TOTAL  TOTAL  TOTAL  TOTAL  TOTAL  TOTAL  TOTAL  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
ATERIAL  Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL  APITAL EQUIPMENT  TOTAL  AVEL  TOTAL  BECONTRACTS / SERVICES  Tuition Remission Diron Technologies	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL APITAL EQUIPMENT  TOTAL AVEL  TOTAL BECONTRACTS / SERVICES Tuition Remission Diron Technologies Paradigm Design Bit7	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
ATERIAL  Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals  PDM Licenses - Renewals  TOTAL  APITAL EQUIPMENT  TOTAL  AVEL  TOTAL  BECONTRACTS / SERVICES  Tuition Remission Diron Technologies Paradigm Design	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
ATERIAL  Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals  PDM Licenses - Renewals  TOTAL  APITAL EQUIPMENT  TOTAL  AVEL  TOTAL  BECONTRACTS / SERVICES Tuition Remission Diron Technologies Paradigm Design Bit7  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
ATERIAL  Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals  PDM Licenses - Renewals  TOTAL  APITAL EQUIPMENT  TOTAL  AVEL  TOTAL  BECONTRACTS / SERVICES  Tuition Remission Diron Technologies Paradigm Design Bit7  TOTAL  TOTAL  TOTAL  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	
ATERIAL  Miscellaneous Expenses Labview Software License SolidWorks Licenses - Renewals PDM Licenses - Renewals  TOTAL  APITAL EQUIPMENT  TOTAL  RAVEL  TOTAL  JBCONTRACTS / SERVICES Tuition Remission Diron Technologies Paradigm Design Bit7  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$10,000 \$1,200 \$4,500 \$2,000 \$0 \$0 \$0 \$0 \$0 \$17,700 \$0 \$0 \$17,700 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	

	2008-2009	PY02 2009-2010	PY03 2010-2011	PY04 2011 - 2012	O/H RATE:	45.0 Ave FTE
BOR	2008-2009 APR - JUN	2009-2010 JUL - JUN	2010-2011 JUL - JUN	2011 - 2012 JUL - MAR	TOTAL	Ave FIE Project Life
	APR - JUN	JUL - JUN	JUL - JUN	JUL - MAR	0	0.0
Principal Investigator, Andrew Sheinis Project Scientist, Marsha Wolf	0	0	0	750	750	0.0
Co-Investigator, Matt Bershady	0	0	0	0	0	0.
Co-Investigator, Amy Barger	0	0	0	0	0	0.0
Sr. Scientist Advisor, Ken Nordsieck	0	0	0	0	0	0.0
Project Manager, Mark Mulligan	0	0	0	0	0	0.0
Quality Assurance & Safety Manager, Tom Demke	0	0	0	0	0	0.0
Systems Engineer, Don Thielman	0	0	0	450	450	0.
Electrical Engineer, Paul Sendelbach	0	0	0	0	0	0.
Lead Mechanical Engineer, Mike Smith	0	0	0	450	450	0.
Electronics Technician	0	0	0	0	0	0.
Opto-mechanical Engineer, Jeff Wong*	0	0	0	0	0	0.
Software Programmer, Jeff Percival	0	0	0	375	375	0.
Postdoc, Ryan Doering	0	0	0	225	225	0.
Mechanical Engineer, Bill Mason	0	0	0	450	450	0.
Designers*	0	0	0	0	0	0.
Machinist	0	0	0	0	0	0.
Instructor	0	0	0	0	0	0.
Co-Investigator, Ted Wiliams	0	0	0	0	0	0.
Controls Engineer, Ron Koch*	0	0	0	0	0	0
Graduate Students	0	0	0	750	750	0.
Undergraduate Students	0	0	0	0	0	0.
*Labor costs for these resources are presened in Subd	contracts/Services.	-		- 11		
TOTAL HOURS:	0	0	0	3.450	3,450	0.
TOTAL FTEs:	0.00	0.00	0.00	4.60	0.72	
SALARY	\$0	\$0	\$0	\$141,305	\$141,305	
FRINGE	\$0	\$0	\$0	\$51,484	\$51,484	
TOTAL LABOR	\$0	\$0	\$0	\$192,789	\$192,789	
ATERIAL	7-2	7.7	7-	¥ ,	¥1.52,1.53	
Miscellaneous equipment / expenses	\$0	\$0	\$0	\$10,500	\$10,500	
Shipping container and packing materials	\$0	\$0	\$0	\$2,500	\$2,500	
SolidWorks Licenses - Renewals	\$0	\$0	\$0	\$4,500	\$4,500	
PDM Licenses - Renewals	\$0	\$0	\$0	\$0	\$0	
LabView Renewal	\$0	\$0	\$0	\$500	\$500	
	\$0					
		\$0	\$0	\$0	\$0	
		\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	
	\$0	\$0	\$0	\$0	\$0	
	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	
TOTAL	\$0 \$0 \$0	\$0 \$0 \$0	\$0 \$0 \$0	\$0 \$0 \$0	\$0 \$0 \$0	
TOTAL POLIPMENT	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	\$0 \$0	
PITAL EQUIPMENT	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0	\$0 \$0 \$0 \$18,000	\$0 \$0 \$0 \$18,000	
1	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$18,000	\$0 \$0 \$0 \$18,000	
PITAL EQUIPMENT	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$18,000 \$10,000 \$0	\$0 \$0 \$0 \$18,000 \$10,000 \$0	
PITAL EQUIPMENT	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$18,000 \$10,000 \$0 \$0	\$0 \$0 \$0 \$18,000 \$10,000 \$0 \$0	
PITAL EQUIPMENT	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0	\$0 \$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0	
PITAL EQUIPMENT Instrument Shipping	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0 \$0	
APITAL EQUIPMENT Instrument Shipping TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0	\$0 \$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0	
Instrument Shipping  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0 \$0 \$10,000	\$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0 \$0 \$0 \$10,000	
Instrument Shipping  TOTAL  AVEL  Commissioning (Integrate)	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0 \$0 \$0 \$10,000 \$10,000	\$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0 \$0 \$0 \$0 \$10,000	
Instrument Shipping  TOTAL  AVEL  Commissioning (Integrate)  Commissioning (Integrate & Test)	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476	\$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0 \$0 \$0 \$10,000 \$9,113	
Instrument Shipping  TOTAL  AVEL  Commissioning (Integrate)	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714	
Instrument Shipping  TOTAL  AVEL  Commissioning (Integrate)  Commissioning (Integrate & Test)	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$110,000 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714	\$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714	
Instrument Shipping  TOTAL  AVEL  Commissioning (Integrate)  Commissioning (Integrate, Test, Comm, & Train)	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$118,000 \$10,000 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0	\$0 \$0 \$18,000 \$110,000 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0	
APITAL EQUIPMENT Instrument Shipping  TOTAL AVEL Commissioning (Integrate) Commissioning (Integrate & Test) Commissioning (Integrate, Test, Comm, & Train)	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$110,000 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714	\$0 \$0 \$18,000 \$10,000 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714	
APITAL EQUIPMENT Instrument Shipping  TOTAL AVEL Commissioning (Integrate) Commissioning (Integrate & Test) Commissioning (Integrate, Test, Comm, & Train)  TOTAL BECONTRACTS / SERVICES	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$0 \$95,303	\$0 \$0 \$18,000 \$110,000 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$0	
APITAL EQUIPMENT Instrument Shipping  TOTAL AVEL Commissioning (Integrate) Commissioning (Integrate & Test) Commissioning (Integrate, Test, Comm, & Train)  TOTAL BECONTRACTS / SERVICES Tuition Remission	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$110,000 \$0 \$0 \$0 \$0 \$0 \$10,000 \$11,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$18,000 \$110,000 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$95,303	
TOTAL  AVEL Commissioning (Integrate) Commissioning (Integrate & Test) Commissioning (Integrate, Test, Comm, & Train)  TOTAL  BECONTRACTS / SERVICES  Tuition Remission Diron Technologies	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$110,000 \$0 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$18,000 \$110,000 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$95,303	
TOTAL  AVEL Commissioning (Integrate) Commissioning (Integrate & Test) Commissioning (Integrate, Test, Comm, & Train)  TOTAL  BECONTRACTS / SERVICES Tuition Remission Diron Technologies Paradigm Design	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$110,000 \$0 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$95,303	
TOTAL  AVEL  Commissioning (Integrate)  Commissioning (Integrate, Test, Comm, & Train)  TOTAL  BECONTRACTS / SERVICES  Tuition Remission  Diron Technologies  Paradigm Design  Bit7	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$0 \$10,000 \$91,113 \$34,476 \$51,714 \$0 \$0 \$0 \$95,303	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$95,303	
TOTAL  AVEL Commissioning (Integrate) Commissioning (Integrate & Test) Commissioning (Integrate, Test, Comm, & Train)  TOTAL  BECONTRACTS / SERVICES Tuition Remission Diron Technologies Paradigm Design	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$110,000 \$0 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$95,303	
Instrument Shipping  TOTAL  AVEL  Commissioning (Integrate)  Commissioning (Integrate & Test)  Commissioning (Integrate, Test, Comm, & Train)  TOTAL  BECONTRACTS / SERVICES  Tuition Remission  Diron Technologies  Paradigm Design  Bit7  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$10,000 \$9113 \$34,476 \$51,714 \$0 \$0 \$95,303 \$8,900 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$0 \$95,303 \$8,900 \$0 \$8,900	
TOTAL  AVEL  Commissioning (Integrate)  Commissioning (Integrate, Test, Comm, & Train)  TOTAL  BECONTRACTS / SERVICES  Tuition Remission  Diron Technologies  Paradigm Design  Bit7	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$0 \$10,000 \$91,113 \$34,476 \$51,714 \$0 \$0 \$0 \$95,303	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$95,303	
Instrument Shipping  TOTAL  AVEL  Commissioning (Integrate)  Commissioning (Integrate & Test)  Commissioning (Integrate, Test, Comm, & Train)  TOTAL  BECONTRACTS / SERVICES  Tuition Remission  Diron Technologies  Paradigm Design  Bit7  TOTAL	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$10,000 \$9113 \$34,476 \$51,714 \$0 \$0 \$95,303 \$8,900 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	\$0 \$0 \$18,000 \$118,000 \$0 \$0 \$0 \$0 \$10,000 \$9,113 \$34,476 \$51,714 \$0 \$0 \$0 \$95,303 \$8,900 \$0 \$8,900	